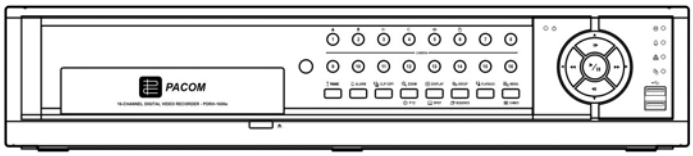
DIGITALVIDEO**RECORDERS**
SUPERIOR BY DESIGN

PACOM

NOW WITH H.264

DIGITAL VIDEO RECORDER
8- AND 16-CHANNEL MODELS

USER'S MANUAL



WARNING

RISK OF ELECTRIC SHOCK
DO NOT OPEN

WARNING: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED
SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

COMPLIANCE NOTICE OF FCC:

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS A DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE, IN WHICH CASE USERS WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT THEIR OWN EXPENSE.

WARNING: CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

THIS CLASS OF DIGITAL APPARATUS MEETS ALL REQUIREMENTS OF THE CANADIAN INTERFERENCE-CAUSING EQUIPMENT REGULATIONS.

The information in this manual is believed to be accurate as of the date of publication. We are not responsible for any problems resulting from the use thereof. The information contained herein is subject to change without notice. Revisions or new editions to this publication may be issued to incorporate such changes.

Important Safeguards

1. Read Instructions
All the safety and operating instructions should be read before the appliance is operated.

2. Retain Instructions
The safety and operating instructions should be retained for future reference.

3. Cleaning
Unplug this equipment from the wall outlet before cleaning it. Do not use liquid aerosol cleaners. Use a damp soft cloth for cleaning.

4. Attachments
Never add any attachments and/or equipment without the approval of the manufacturer as such additions may result in the risk of fire, electric shock or other personal injury.

5. Water and/or Moisture
Do not use this equipment near water or in contact with water.

6. Ventilation
Place this equipment only in an upright position. This equipment has an open-frame Switching Mode Power Supply (SMPS), which can cause a fire or electric shock if anything is inserted through the ventilation holes on the side of the equipment.

7. Accessories
Do not place this equipment on an unstable cart, stand or table. The equipment may fall, causing serious injury to a child or adult, and serious damage to the equipment. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.

This equipment and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the equipment and cart combination to overturn.

8. Power Sources
This equipment should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power, please consult your equipment dealer or local power company.

9. Power Cords
Operator or installer must remove power and TNT connections before handling the equipment.

10. Lightning
For added protection for this equipment during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the equipment due to lightning and power-line surges.

11. Overloading
Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.

12. Objects and Liquids
Never push objects of any kind through openings of this equipment as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the equipment.

13. Servicing
Do not attempt to service this equipment yourself. Refer all servicing to qualified service personnel.

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Do not attempt to service this equipment yourself. Refer all servicing to qualified service personnel.

14. Damage requiring Service
Unplug this equipment from the wall outlet and refer servicing to qualified service personnel under the following conditions:

A. When the power-supply cord or the plug has been damaged.
B. If liquid is spilled, or objects have fallen into the equipment.
C. If the equipment has been exposed to rain or water.
D. If the equipment does not operate normally by following the operating instructions, adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the equipment to its normal operation.
E. If the equipment has been dropped, or the cabinet damaged.
F. When the equipment exhibits a distinct change in performance ─ this indicates a need for service.

15. Replacement Parts
When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

16. Safety Check
Upon completion of any service or repairs to this equipment, ask the service technician to perform safety checks to determine that the equipment is in proper operating condition.

17. Field Installation
This installation should be made by a qualified service person and should conform to all local codes.

18. Correct Batteries
Warning: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

19. Tmra
A manufacturer's maximum recommended ambient temperature (Tmra) for the equipment must be specified so that the customer and installer may determine a suitable maximum operating environment for the equipment.

20. Elevated Operating Ambient Temperature
If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

21. Reduced Air Flow
Installation of the equipment in the rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.

22. Mechanical Loading
Mounting of the equipment in the rack should be such that a hazardous condition is not caused by uneven mechanical loading.

23. Circuit Overloading
Consideration should be given to connection of the equipment to supply circuit and the effect that overloading of circuits might have on over current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

24. Reliable Earthing (Grounding)
Reliable grounding of rack mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

WEEE (*Waste Electrical & Electronic Equipment*)

Correct Disposal of This Product
(Applicable in the European Union and other European countries with separate collection systems)

This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

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Chapter 1 – Introduction

Features

Your color digital video recorder (DVR) provides recording capabilities for eight or 16 camera inputs. It provides exceptional picture quality in both live and playback modes, and offers the following features:

- 8 or 16 Composite Video Input Connectors
- Compatible with Color (NTSC or PAL) and B&W (CCIR and EIA-170) Video Sources
- Auto Detection for NTSC and PAL
- Multiple Monitor Connectors: 1 BNC Video Out, 1 Spot, 1 VGA
- Auto Detection for VGA Monitor
- Dual Codec (H.264 and MPEG-4)
- Multiple Search Engines (Date/Time, Calendar, Event)
- Records up to 120/100 Images per Second (NTSC/PAL)
- "Loop-Through" Video Connectors
- Continuous Recording in Disk Overwrite Mode
- 2 USB 2.0 Ports
- Continues Recording while Transmitting to Remote Site and during Playback
- User-friendly Graphical User Interface (GUI) Menu System
- Multiple Recording Modes (Time-lapse, Pre-event, Alarm, Motion and Panic)
- 4-Channel Audio Recording and 1-Channel Audio Playback
- Text Input for ATM and POS
- Alarm Connections Include: Input, Output and Reset Input
- Built-in Alarm Buzzer
- Live or Recorded Video Access via Ethernet
- Time Synchronization using industry standard protocol
- Built-in DVD RW Drive
- Self-diagnostics with automatic notification including hard disk drive S.M.A.R.T. protocol
- Infrared Remote Control

Technical Overview

In addition to replacing both a time-lapse VCR and a multiplexer in a security installation, your DVR has many features that make it much more powerful and easier to use than even the most advanced VCR.

The DVR converts analog NTSC or PAL video to digital images and records them on a hard disk drive. Using a hard disk drive allows you to access recorded video almost instantaneously; there is no need to rewind tape. The technology also allows you to view recorded video while the DVR continues recording video.

Digitally recorded video has several advantages over analog video recorded on tape. There is no need to adjust tracking. You can freeze frames, fast forward, fast reverse, slow forward and slow reverse without image streaking or tearing. Digital video can be indexed by time or events, and you can instantly view video after selecting the time or event.

Your DVR can be set up for event or time-lapse recording. You can define times to record, and the schedule can change for different days of the week and user defined holidays.

The DVR can be set up to alert you when the hard disk drive is full, or it can be set to record over the oldest video once the disk is full.

Your DVR uses a proprietary encryption scheme making it nearly impossible to alter video.

You can view video and control your DVR remotely by connecting via Ethernet. There are two USB ports that can be used to upgrade the system or copy video clips to external hard disk, CD-RW and flash drives.

NOTE: This manual covers the 8- and 16-channel digital video recorders. The DVRs are identical except for the number of cameras and alarms that can be connected and the number of cameras that can be displayed. For simplicity, the illustrations and descriptions in this manual refer to the 16-camera model.

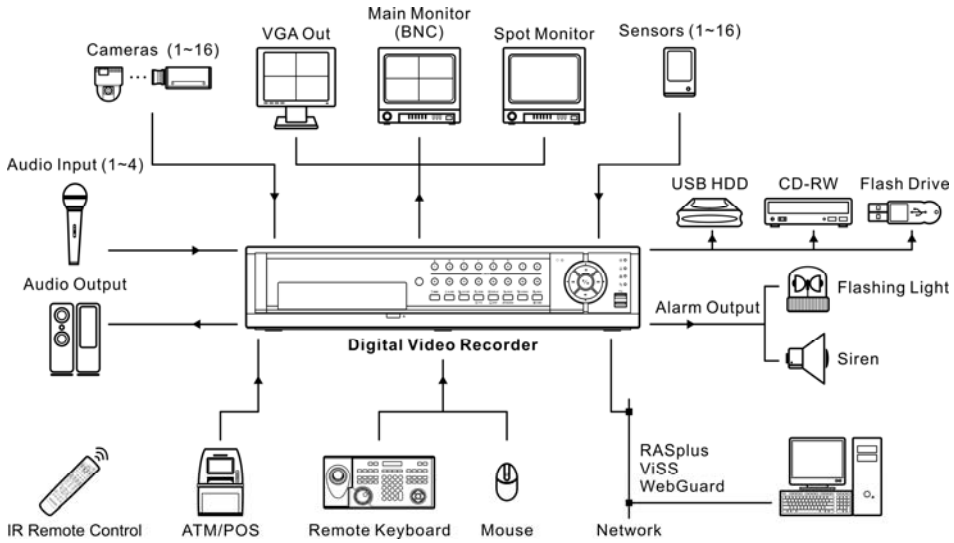


Figure 1 ─ Typical DVR installation.

Chapter 2 ─ Installation

Package Contents

The package contains the following:

- Digital Video Recorder
- Power Cord
- User's Manual (This Document)
- RAS Software CD and User's Manual
- Rack-mount Kit
- Assembly Screws and Guide Rails for Adding Hard Disk Drives
- Infrared Remote Control

Required Installation Tools

No special tools are required to install the DVR. Refer to the installation manuals for the other items that make up part of your system.

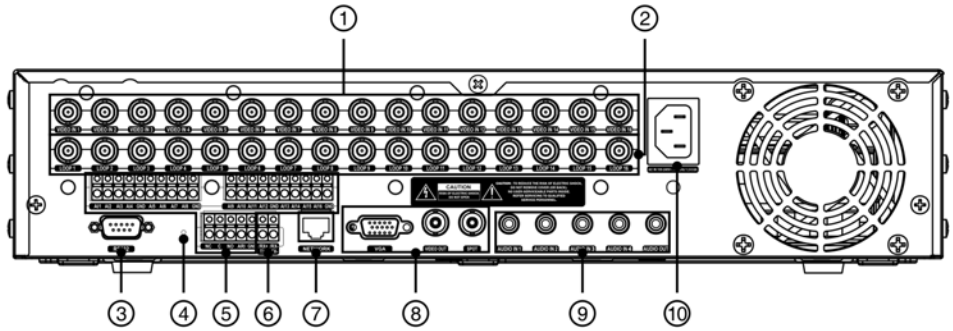


Figure 2 ─ 16-Channel DVR rear panel.

① Video Input	② Video Loop Through	③ RS232C Port	④ Factory Reset Switch
⑤ Alarm Input/Output	⑥ RS485 Port	⑦ Network Port	⑧ Video Out
⑨ Audio In/Out	⑩ Power Cord Connector		

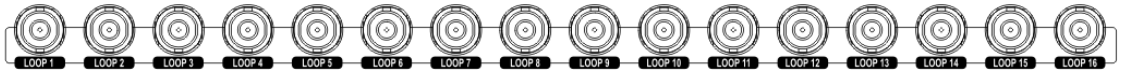
Your DVR can be used with either NTSC or PAL equipment.

NOTE: You cannot mix NTSC and PAL equipment. For example you cannot use a PAL camera and an NTSC monitor.

Video Input

Connect the coaxial cables from the video sources to the BNC Video In connectors.

Video Loop Through



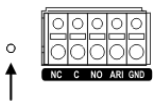
If you would like to connect your video source to another device, you can use the Loop BNC connectors.

NOTE: The Loop BNC connectors are auto terminated. Do NOT connect a cable to the Loop BNC unless it is connected to a terminated device because it will cause poor quality video.

RS232C Port

An RS232 port is provided to connect a remote control keyboard.

Factory Reset Switch



The DVR has a Factory Reset switch to the left of the Alarm Output connectors on the rear panel. This switch will only be used on the rare occasions that you want to return all the settings to the original factory settings.

CAUTION: When using the *Factory Reset*, you will lose any settings you have saved.

To reset the unit, you will need a straightened paperclip:

1. Turn the DVR off.
2. Poke the straightened paperclip in the unlabeled hole to the left of the Alarm Output connectors, and turn the DVR on.
3. Hold the reset switch until the DVR turns on and live monitoring screen appears.
4. Release the reset switch. All of the DVR's settings are now at the original settings it had when it left the factory.

Alarm Input/Output

NOTE: To make connections on the Alarm Connector Strip, press and hold the button and insert the wire in the hole below the button. After releasing the button, tug gently on the wire to make certain it is connected. To disconnect a wire, press and hold the button above the wire and pull out the wire.

AI 1 to 16 (Alarm-In): You can use external devices to signal the DVR to react to events. Mechanical or electrical switches can be wired to the AI (Alarm-In) and GND (Ground) connectors. The maximum voltage should not exceed 3.3V. The threshold voltage of electrical switches for NC (Normally Closed) is above 2.4V and for NO (Normally Open) is below 0.3V, and should be stable at least 0.5 seconds to be detected. See *Chapter 3 ─ Configuration* for configuring alarm input.

GND (Ground): Connect the ground side of the Alarm input and/or alarm output to the GND connector.

NOTE: All the connectors marked GND are common.

NC/NO (Relay Alarm Output): The DVR can activate external devices such as buzzers or lights. Connect the device to the C (Common) and NC (Normally Closed) or C and NO (Normally Open) connectors. NC/NO is a relay output which sinks 2A@125VAC and 1A@30VDC. See *Chapter 3 ─ Configuration* for configuring alarm output.

ARI (Alarm Reset In): An external signal to the Alarm Reset In can be used to reset both the Alarm Out signal and the DVR's internal buzzer. Mechanical or electrical switches can be wired to the ARI (Alarm Reset In) and GND (Ground) connectors. The threshold voltage is below 0.3V and should be stable at least 0.5 seconds to be detected. Connect the wires to the ARI (Alarm Reset In) and GND (Ground) connectors.

RS485 Port

The DVR can be controlled remotely by an external device or control system, such as a control keyboard, using RS485 half-duplex serial communications signals. The RS485 connector can also be used to control PTZ (pan, tilt, zoom) cameras. Connect TX+/RX+ and TX-/RX- of the control system to the RX+/TX+ and RX-/TX- (respectively) of the DVR. See *Chapter 3 ─ Configuration* and the PTZ camera or remote controller manufacture's manual for configuring the RS485 connection.

Network Port

The DVR can be networked using the 10/100Mb Ethernet connector. Connect a Cat5 cable with an RJ-45 jack to the DVR connector. The DVR can be networked with a computer for remote monitoring, searching, configuration and software upgrades. See *Chapter 3 ─ Configuration* for configuring the Ethernet connections.

CAUTION: The network connector is not designed to be connected directly with cable or wire intended for outdoor use.

Video Out

A VGA connector is provided so that you can use a standard, multi-sync computer monitor as your main monitor. Use the cable supplied with your monitor to connect it to the DVR.

Connect the main monitor to the Video Out connector. Connect the spot monitor to the SPOT connector as needed.

NOTE: It is possible that the DVR will not detect a VGA monitor automatically if the connected VGA monitor does not support the auto detection function. In this case, press and hold the PANIC button on the front panel for 5 seconds or longer to switch the video output to VGA out. Pressing and holding the PANIC button for 5 seconds or longer again returns to the previous video output mode.

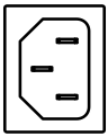
Audio In/Out

Your DVR can record audio from up to four sources. Connect the audio sources to Audio In 1, Audio In 2, Audio In 3 and Audio In 4 as needed using RCA jacks. Connect Audio Out to your amplifier.

NOTE: It is the user's responsibility to determine if local laws and regulations permit recording audio.

NOTE: The DVR does not have amplified audio output, so you will need a speaker with an amplifier. The DVR does not have a pre-amplifier for audio input, so the audio input should be from an amplified source, not directly from a microphone.

Power Cord Connector



Connect the AC power cord to the DVR and then to a wall outlet.

WARNING: ROUTE POWER CORDS SO THAT THEY ARE NOT A TRIPPING HAZARD. MAKE CERTAIN THE POWER CORD WILL NOT BE PINCHED OR ABRADED BY FURNITURE. DO NOT INSTALL POWER CORDS UNDER RUGS OR CARPET.

THE POWER CORD HAS A GROUNDING PIN. IF YOUR POWER OUTLET DOES NOT HAVE A GROUNDING PIN RECEPTACLE, DO NOT MODIFY THE PLUG. DO NOT OVERLOAD THE CIRCUIT BY PLUGGING TOO MANY DEVICES IN TO ONE CIRCUIT.

Your DVR is now ready to operate. Refer to *Chapter 3 ─ Configuration* and *Chapter 4 ─ Operation*.

Chapter 3 ─ Configuration

NOTE: Your DVR should be completely installed before proceeding. Refer to *Chapter 2 ─ Installation*.

Front Panel Controls

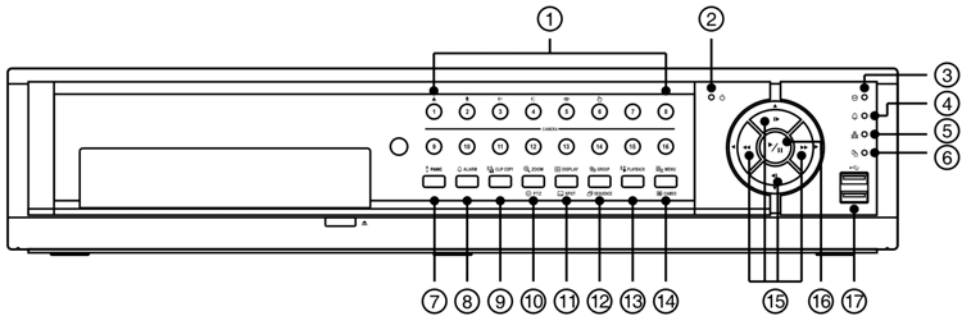


Figure 3 ─ 16-Channel DVR front panel.

① Camera Buttons ② Power LED ③ HDD LED ④ Alarm Out LED
⑤ Network LED ⑥ Clip Copy LED ⑦ Panic Button ⑧ Alarm Button
⑨ Clip Copy Button ⑩ Zoom/PTZ Button ⑪ Display/SPOT Button
⑫ Group/Sequence Button ⑬ Playback Mode Button ⑭ Menu/Cameo Button
⑮ Arrow Buttons ⑯ Play/Pause Button ⑰ USB Port

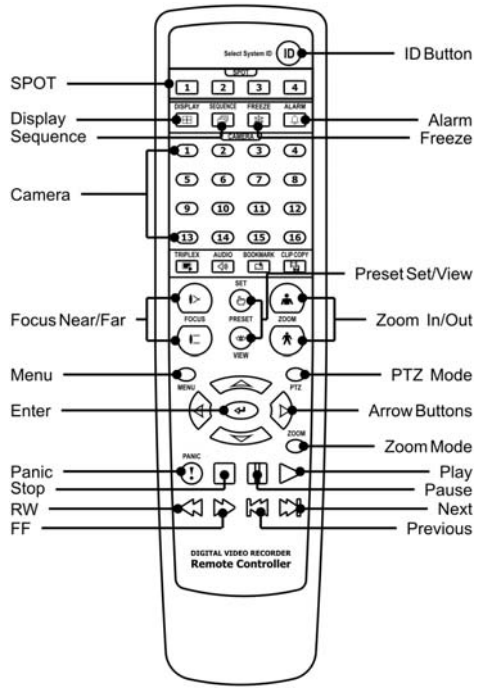


Figure 4 ─ IR Remote Control.

The front panel looks and operates much like a VCR combined with a multiplexer. Many of the buttons have multiple functions. The buttons on the infrared remote control, while laid out differently, perform the same functions as those on the front panel. The following describes each button and control. Take a few minutes to review the descriptions. You will use these to initially set up your DVR and for daily operations.

NOTE: The infrared sensor is just to the right of the MENU button. Make certain that nothing blocks the sensor, or the remote control will not function properly.

NOTE: You can also use a USB mouse (not supplied) to navigate through the screens and menus much like you would on a computer.

Camera Buttons (1 to 16)

Pressing the individual camera buttons will cause the selected camera to display full screen. Buttons 1 to 9 are also used to enter passwords.

In the PTZ mode, pressing the button 1 zooms in the screen and the button 2 zooms out the screen, pressing the button 3 focuses near and button 4 focuses far, and pressing the button 5 moves to the preset and button 6 saves the preset.

Power LED

The POWER LED is lit when the unit is On.

HDD LED

The HDD LED flickers when the DVR is recording or searching video on the hard disk drive.

Alarm Out LED

The Alarm Out LED is lit when alarm output or internal buzzer is activated.

Network LED

The NETWORK LED is lit when the unit is connected to a network via Ethernet.

Clip Copy LED

The Clip Copy LED is lit when the DVR is clip-copying.

PANIC Button

Pressing the PANIC button starts panic recoding of all camera channels, and displays ! on the screen. Pressing the button again will stop panic recording.

NOTE: When the DVR does not detect a VGA monitor automatically, pressing and holding the PANIC button on the front panel for 5 seconds or longer switches the video output to VGA out manually.

ALARM Button

The ALARM button has two functions. First, it will reset the DVR's outputs including the internal buzzer during an alarm. Second, it will display the event log when you are in the live monitoring mode unless there is an active alarm. This operation can be user password protected.

CLIP COPY Button

Pressing the CLIP COPY button allows you to copy video clips.

ZOOM/PTZ Button

Pressing the ZOOM/PTZ button zooms in the current image in double on the screen. You can use the arrow buttons to move the rectangle to another area. Pressing the (Play/Pause) button zooms in the image in rectangle.

Pressing and holding the button for two seconds or longer enters the PTZ (Pan/Tilt/Zoom) mode and the PTZ icon flickers. Pressing the button again exits the PTZ mode. Pressing the arrow buttons or MENU/CAMEO button allows you to control properly configured cameras.

DISPLAY/SPOT Button

Pressing the DISPLAY/SPOT button toggles between different display formats. The available formats are: PIP, 2x2, 3x3 and 4x4.

Pressing and holding the button for two seconds or longer allows you to select which cameras will display on the Spot monitor.

GROUP/SEQUENCE Button

When in the live mode, pressing the GROUP/SEQUENCE button changes the screen from the current camera group to the next camera group, and the screen displays the page number. Pressing and holding the button for two seconds or longer displays live channels sequentially.

PLAYBACK Button

Pressing the PLAYBACK button enters the playback mode, and pressing the button again exits the playback mode. When entering the playback mode, video is paused. Pressing the (Play/Pause) button plays back video at regular speed. The screen displays ❙❙ when the DVR is in the Pause mode and the screen displays ▶ when the DVR is playing back video.

MENU/CAMEO Button

Pressing the MENU/CAMEO button enters the Setup screen. You will need to enter the authorized user and password to access Setup. Pressing the button also closes the current menu or setup dialog box. In the Playback mode, pressing the button displays the Search menu.

Pressing and holding the button for two seconds or longer enters the cameo mode. The yellow outline surrounding the video indicates the active cameo, and pressing the arrow buttons moves the active cameo. Pressing the desired camera button in the active cameo edits the cameo and displays the video of selected camera. Pressing the (Play/Pause) button exits the Active Cameo mode. Selecting Exit Group Edit in the cameo menu displayed when pressing the MENU/CAMEO button also exits the Active Cameo mode.

NOTE: A cameo is defined as any cell within multi-screen display. The cameo mode allows you to change the screen layout by editing the cameo.

Arrow Buttons

These buttons are used to navigate through menus and GUI. You can also use them to change numbers by highlighting a number in the menu and using the Up and Down arrow buttons to increase or decrease the number's value.

These buttons are also used to control Pan and Tilt when in the PTZ mode. When in the PIP display format, pressing the Up and Down arrow buttons moves the position of the small screen counter-clockwise and clockwise, and pressing the Left and Right buttons changes the PIP screen size.

In the playback mode, pressing the ◀◀ button plays video backward at high speed. Pressing the button again toggles the playback speed from ◀◀, ◀◀◀ and ◀◀◀◀. The screen displays ◀◀, ◀◀◀ and ◀◀◀◀ respectively. Pressing the ▶▶ button plays video forward at high speed. Pressing the button again toggles the playback speed from ▶▶, ▶▶▶ and ▶▶▶▶. The screen displays ▶▶, ▶▶▶ and ▶▶▶▶ respectively. When in the pause mode, pressing the ▶ button moves to the next image and pressing the ◀ button moves to the previous image.

PLAY/PAUSE Button

In the live monitoring mode, pressing the button freezes the current screen and the screen displays icon. When in the playback mode, pressing the button plays back images at regular speed or pauses playing video.

Pressing the button selects a highlighted item or completes an entry that you have made during system setup.

USB Port

Two USB ports on the front panel are provided to connect external hard disk, CD-RW or flash drives for video clip copying or system upgrades. Position external drives close enough to the DVR so that you can make the cable connections, usually less than 6 feet. Use the USB cable provided with the hard disk drive to connect it to the DVR.

A USB mouse (not supplied) can be connected to one of the ports. You can use the mouse to navigate through the screens and menus much like you would on a computer.

A USB to Serial converter can be connected to the USB port. Multiple text-in devices can be used with a USB to Serial converter.

ID Button on Remote Control

If a DVR System ID is set to 0, the infrared remote control will control that DVR without any additional operations. (Refer to the System setup screen in this chapter for further information on setting the System ID.) If the system ID is 1 to 16, you must to press the ID button on the remote control and then press the number button (1 to 16) in order to control that DVR. If the System ID of two or more DVRs is set to 0, those DVRs will react to the infrared remote control at the same time.

Turning on the Power

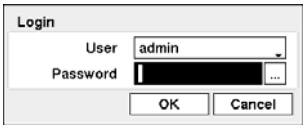
Connecting the power cord to the DVR turns on the unit. The unit takes approximately 60 seconds to initialize.

Initial Unit Setup

Before using your DVR for the first time, you will want to establish the initial settings. This includes items such as time and date, display language, camera, audio, remote control, record mode, network and password. Your DVR can be set up using various screens and dialog boxes.

Throughout the screens you will see . Highlighting the and pressing the (Play/Pause) button gives you the opportunity to reset that screen to its default settings.

Press the MENU button to enter the setup screens. The Login screen appears.



Select a User and enter the password by pressing the appropriate combination of Camera number buttons and then the button. There is no default password when logging in the admin user for the first time.

Figure 5 ─ Login screen.

NOTE: To assure the secure management of the system, setting up a password is strongly recommended.

NOTE: You can use a mouse (not supplied) to access the *Login* screen in addition to using the front panel buttons or the infrared remote control. Move the mouse pointer to the top of the screen and then select (Login) in the Live Monitoring menu to display the *Login* screen. To enter a password, click the button, and the virtual keyboard displays. See instructions below for using the virtual keyboard.

NOTE: To log the user out of the system, press the MENU button or move the mouse pointer to the top of the screen and then select (Logout) in the Live Monitoring menu. The Logout screen displays asking you to confirm whether or not you want to log out the current user.

Setup Screen

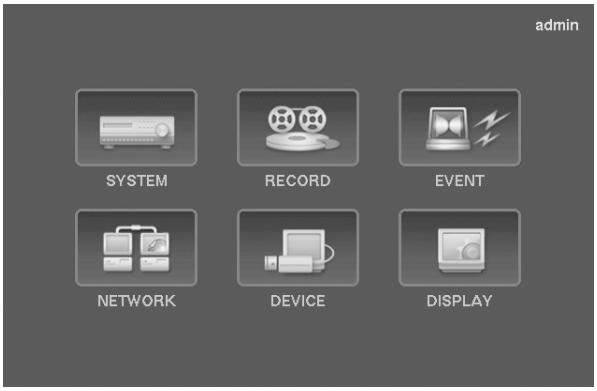


Figure 6 ─ Setup screen.

Press the MENU button or move the mouse pointer to the top of the screen and then select (Setup) in the Live Monitoring menu to enter the setup screen. While setting up the DVR, there will be many opportunities to enter names and titles. When making these entries, a Virtual Keyboard will appear.

Use the arrow keys to highlight the character you want in the name or title and press the button. That character appears in the title bar and the cursor moves to the next position. Pressing toggles between the upper and lower case keyboards, backspaces, and deletes entered characters. You can use up to 31 characters including spaces in your title.
Special characters can be created using ^ and a capital letter; e.g., ^J for NL (New Line), ^M for CR (Carriage Return). Special characters are commonly used by text input devices and will be useful when performing Text-In Searches.

System Menu

System Setup (SYSTEM → System Tab)

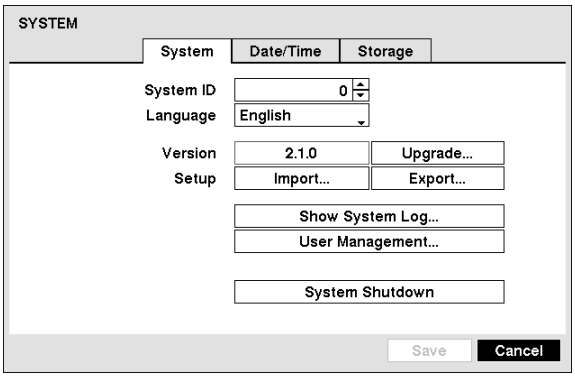


Figure 7 – System screen.

In the System screen, you can assign a System ID number, select the language the screens are displayed in, display software version number, upgrade the software, show the System Log, register users, and shut the system down.

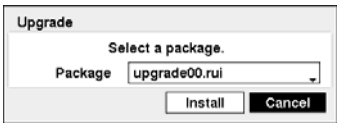
Highlight the box beside System ID and press the button. Change the number by highlighting it and using the Up and Down arrow buttons to increase and decrease the number from 0 to 99.

NOTE: The System ID number is used to identify the unit when it is connected with other DVRs through the RS485 port. You cannot use the same ID number for two or more DVRs that are in the same RS485 network. It is possible to have multiple DVRs with System ID 0 that are in the same area as long as they are not part of an RS485 network. If this is the case, all will be controlled at the same time when using the infrared remote control.

Highlight the box beside Language and press button. A drop-down menu displays the available languages. Highlight the desired language and press the button.

The box beside Version displays the software version of the DVR.

To upgrade the software, connect a USB device containing the upgrade package file to the DVR. Highlight Upgrade… and press the button. The Upgrade screen appears.

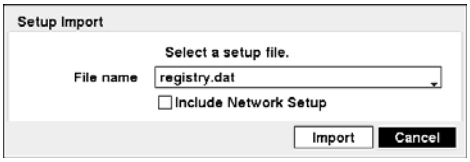


The screen displays the upgrade package file names that are available. The ".rui" indicates that the file is for software upgrades and ".ofi" indicates that the file is for optical drive firmware upgrades. Select the desired file and press the button.

Highlighting the Install button and pressing the button will install the selected software package. Highlighting the Cancel button and pressing the button will close the window without upgrading the software. If the upgrade package file is not installed on the DVR properly, you will get an error message. The system restarts automatically after completing the upgrade.

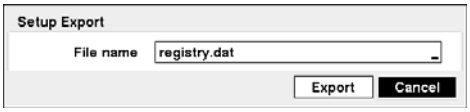
CAUTION: The USB device must be FAT16 or FAT32 format.

You can import saved DVR settings or export the current DVR settings. To import saved DVR settings, connect the USB device containing the setup file (.dat) to the DVR. Highlight Setup – Import… and press the button.



Select the desired setup file and press the Import button to import the selected settings and change the DVR settings accordingly. Highlight Include Network Setup and press the button to toggle between On and Off. When set to Off, the network settings will not be changed.

To export the current DVR settings, connect the USB device to the DVR. Highlight Setup – Export… and press the button.

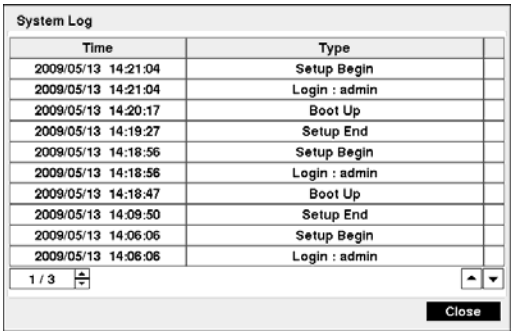


Highlight the box beside File name and press the button. A virtual keyboard allows you to enter the file name. Selecting Export will save the current settings in .dat file format on the USB device.

NOTE: Even after changing the DVR settings by importing saved settings, the time-related settings (Date/Time, Time Zone and Daylight Saving Time) will NOT be changed.

CAUTION: The USB device must be FAT16 or FAT32 format.

Highlight Show System Log… and press the button to display the System Log.



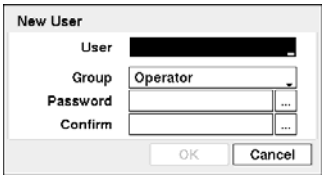
The System Log screen lists system activities (up to 5,000 from the latest) that have occurred along with the time and date. The icon will be displayed in the last column for system activities of the remote site. You can scroll through the log pages by using the Up and Down arrows, or you can go directly to a log page by entering the log page number in the box at the bottom left of the screen. Highlight Close and press the button to exit the screen.

Highlight User Management… and press the button. The User Management setup screen displays the authorized groups and users. You can add and delete users and assign authority levels to the group.

The +/- column is used to collapse and expand user groups. If there is a + or – in this column, it indicates the item is a Group Name. If there is a – in front of the Group Name, it indicates that the group has been "expanded" and all of the User Names within that group are displayed below the Group Name. If there is a + in front of the Group Name, it indicates that the group has been "collapsed" and all of the User Names within that group are hidden. To collapse or expand a group, highlight the +/- column in front of the desired group and press the button.

To add a User, highlight the + User… box and press the button. A virtual keyboard appears allowing you to enter the User Name.

NOTE: Up to five Users can be registered to the Operator group.



Enter the name and assign password. You can use camera buttons 1 to 9 on either the front panel to assign the password. The password can be up to 8 digits. You will be asked to confirm the password.

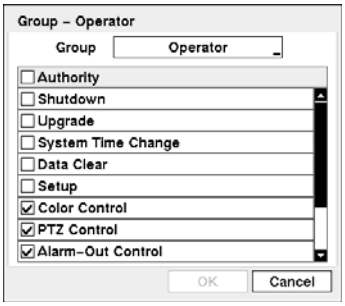
NOTE: In addition to using the front panel buttons, you can use the virtual keyboard to assign the password. To display the virtual keyboard click the ... button using the mouse (not supplied).

CAUTION: Write down the new password and save it in a secure place. If the password is forgotten, the unit must be reset using the *Factory Reset Button* and all data settings will be lost.

Highlighting a User Name and pressing the button allows you to add or change the password assigned to that user.

The ✖ column can be used to delete a User Name If the ✖ is grayed out, that User cannot be deleted. Highlight the ✖ and press the button. You will be asked to confirm that you want to delete the User. To delete the User currently logged into the DVR on a local system or a PC running RAS, log the user out of the system first and then delete the user.

Highlighting an Operator Group Name and pressing the button allows you to change the authority levels assigned to the group.



Highlighting the Authority box and pressing the button will toggle between all authority levels being turned On and Off. Highlighting the individual authority level boxes and pressing the button will toggle between that authority level being turned On and Off.

The authority levels that can be turned On and Off are:

- Shutdown — The user can shut the system down on a local system.
- Upgrade — The user can upgrade the software on a local system or a PC running RAS.
- System Time Change — The user can change the system date and time on a local system or a PC running RAS.
- Data Clear — The user can clear all video data or format disks on a local system or a PC running RAS.

- Setup ─ The user without Setup authority cannot establish any system settings excluding system shutdown and logout on a local system or a PC running RAS.
- Color Control ─ The user can control brightness, contrast, hue and saturation for cameras on a local system or a PC running RAS.
- PTZ Control ─ The user can control the PTZ camera on a local system or a PC running RAS.
- Alarm-Out Control ─ The user can reset the DVR's outputs including the internal buzzer during an alarm by pressing the ALARM button on a local system or alarm-out control button on a PC running RAS.
- Covert Camera View ─ The user can view video from cameras set as Covert while in the Live Monitoring or Search mode on a local system or a PC running RAS.
- Record Setup ─ The user can establish all Record settings on a local system or a PC running RAS.
- Search ─ The user can access the Search mode on a local system or a PC running RAS.
- Clip-Copy ─ The user can copy video clips on a local system or a PC running RAS, and save video data in an AVI, bitmap or JPEG file format.

Highlight System Shutdown and press the button. The Shutdown screen displays asking you to confirm whether or not you want to shut the system down.

After selecting Shutdown and pressing the button, a screen will appear telling you when it is safe to disconnect power.

After you are finished with the System Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Date/Time Settings (SYSTEM → Date/Time Tab)

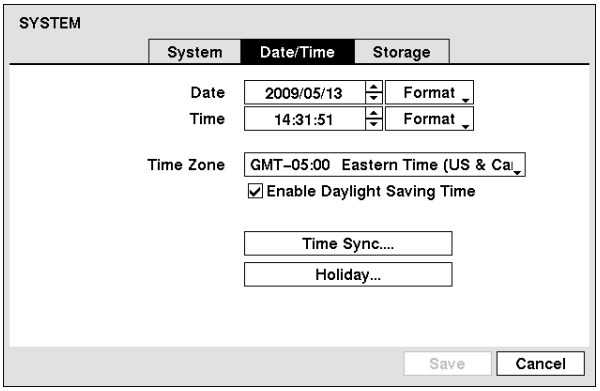


Figure 8 ─ Date/Time screen.

Highlight the first box beside Date and press the button. The individual sections of the date will highlight. Use the Up and Down arrow buttons to change the number. Use the Left and Right arrow buttons to move between month, date and year. Once you have the correct date, press the button.

Highlight the Format box beside Date and press the button. Select from the three available date formats and press the button to save your selected format.

Highlight the first box beside Time and press the button. The individual sections of the time will highlight. Use the Up and Down arrow buttons to change the number. Use the Left and Right arrow buttons to move between hour, minutes and seconds. Once you have the correct time, press the button.

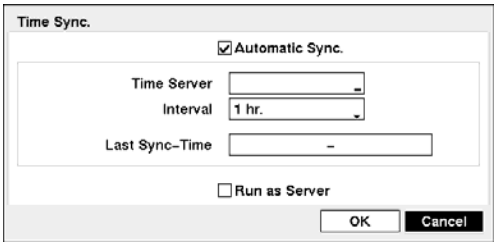
Highlight the Format box beside Time and press the button. Select from the three available time formats and press the button to save your selected format.

NOTE: The clock will not start running until you have highlighted *Save* and pressed the button.

Highlight the box beside Time Zone and press the button. Select your time zone from the list and press the button.

Highlight Enable Daylight Saving Time and press the button. Pressing the button toggles between On and Off.

Highlight Time Sync… and press the button. You can set up time synchronization between the DVR and standard time servers that are available in most time zones and countries, or between the DVR and another DVR.



Highlight the box beside Automatic Sync. and press the button. This toggles between On and Off.

Highlight the box beside Time Server and press the button. A virtual keyboard appears that you can use to enter the IP address or domain name of the time server.

NOTE: You can use the domain name instead of IP address if you already set up the DNS Server when setting up the Network.

Highlight the box beside Interval and press the button. Set the time interval for synchronization from 30 minutes to 1 day at various time intervals.

Last Sync-Time displays the last time the DVR was synchronized with the time server.

Highlight Run as Server and press the button. Pressing the button toggles between On and Off. When it is On, the DVR you are setting up will run as a time server.

Highlight Holiday… and press the button. You can set up holidays by highlighting + and pressing the button. The current date appears.

Highlight the month and day and change them by using the Up and Down arrow buttons. Press the button to add the date. Dates can be deleted by highlighting the ✖ beside the date and pressing the button.

NOTE: Holidays that do not fall on the same date each year should be updated once the current year's holiday has passed.

After you are finished with the Date/Time Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Storage Setup (SYSTEM → Storage Tab)

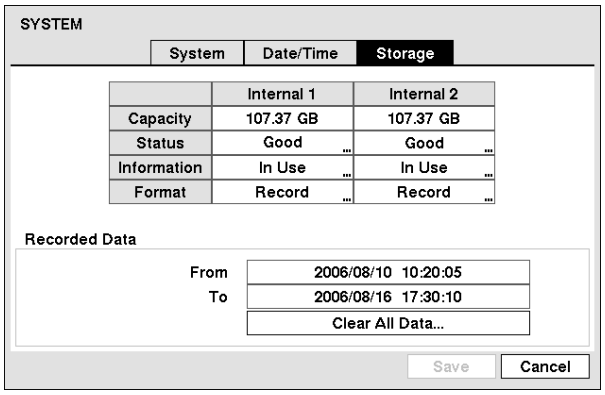
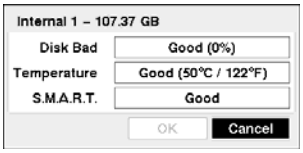


Figure 9 – Storage screen.

The box beside Capacity displays the capacity of the storage device.

The box beside Status displays the status of the storage device. Highlighting the box beside Status for the desired storage device and pressing the button displays the Disk Bad, Temperature and S.M.A.R.T. information of the storage device.

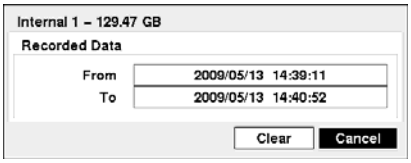


- Disk Bad – Displays the damage status of the storage drive. (Not Formatted (The device is not formatted), Good (%) (The device is working properly though some portion (%) of the storage is damaged.) or Bad (More than 90% of the storage is damaged.))

- Temperature – Displays the temperature of the storage drive. (N/A (The DVR cannot read the temperature.), Good (The temperature is normal.) or Bad (The temperature is 70°C (158°F) or higher.))
- S.M.A.R.T. – Displays S.M.A.R.T. information of the storage. (Good (The storage condition is normal.), Bad (Data cannot be written on or read from the storage drive.) or N/A (The S.M.A.R.T. monitoring is not working or supported.))

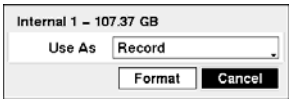
NOTE: When the S.M.A.R.T. displays "Bad", the screen displays a message box. Once the "Bad" message displays, replacing the hard disk drive is recommended, usually within 24 hours.

The box beside Information displays whether the device is being used or not. "Other" indicates the device has been used for another DVR. Highlight the box beside Information for the desired storage device and press the button.



You will be able to check the time information about recorded data. If you want to erase recorded data on the selected device, highlight Clear and press the button. You will be asked whether or not you want to delete the data.

The box beside Format indicates the device is used for recording (Record) or not (Not Using). Selecting the column for the desired device allows you to format the device for recording.



When selecting Not Using from Use As and highlighting the Format button, the device will not be used for recording.

The box beside Recorded Data – From / To displays the time information of recorded data.

Highlighting Clear All Data… and pressing the button will clear all video data. You will be asked to verify that you wish to clear all data before the DVR erases the video data. Clear All Data… will not clear the System Log.

After you are finished with the Storage Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Recording Menu

Your DVR offers a variety of flexible recording modes. You can set it up to record all the time or to only record events. It can be set up to continue recording once the hard disk drive is full by recording over the oldest video, or you can set it up to alert you when the hard disk is full and stop recording.

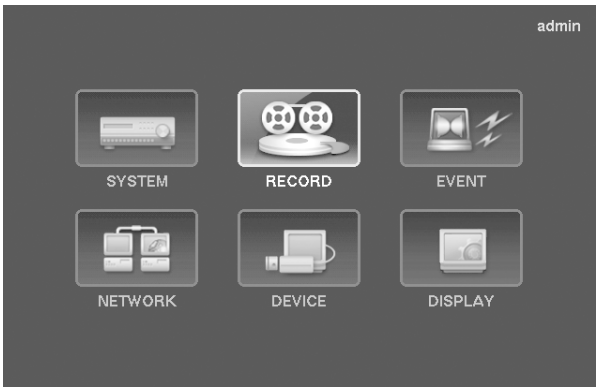


Figure 10 – Record menu.

General Setting (RECORD → General Tab)

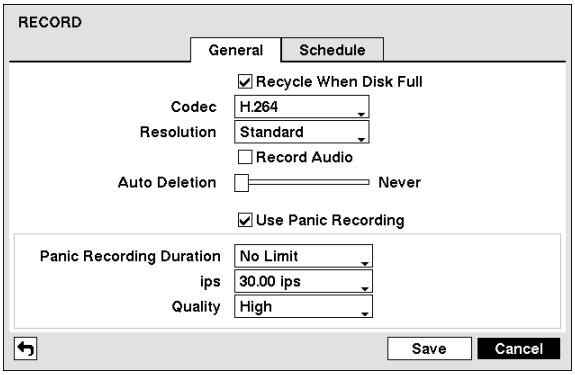


Figure 11 – General screen.

Highlighting Recycle When Disk Full and pressing the button toggles between On and Off. In the Recycle mode, the DVR records over the oldest video data once all available storage space has been used. When Recycle is turned off, the DVR stops recording once all available storage space has been used.

Highlight the box beside Codec and select between H.264 and MPEG-4. Selecting the new codec displays a message asking you to confirm whether or not you want to restart the system because the system must be restarted before applying the new codec and you will lose all recording data.

CAUTION: When changing the codec all recording data is deleted before applying the new codec. If you don't want to delete the recording data, back up it using the clip-copy function.

NOTE: Selecting the H.264 codec and enabling the VGA Enhancement function will cause the recording speed to be decreased by half. Refer to the Display Menu, Main Monitor Setup section in this chapter for setting up the VGA Enhancement function.

NOTE: The maximum recording and playback speed when using the H.264 codec is as follows.

When the DVR is in the Recording Mode only	
Disable VGA Enhancement	Enable VGA Enhancement
120 ips (100 ips PAL)	60 ips (50 ips PAL)

When the DVR is in the Recording mode and Playback mode at the same time	
Recording Speed	Playback Speed
60 ips (50 ips PAL)	120 ips (100 ips PAL)

Highlight the Resolution box and select from Very High, High and Standard.

NOTE: The total ips of all camera channels will be limited to 60 ips (50 ips PAL) when set to *High* resolution and 30 ips (25 ips PAL) when set to *Very High* resolution.

NOTE: When set to *High* or *Very High* resolution, the maximum recording speed of each camera channel decreases by half. However the maximum recording speed of 30 ips (25 ips PAL) will be maintained if the number of cameras that are turned On is two or less.

No. of cameras set to *On* and *High* or *Very High* resolution			
0	1	2	3 to 16
—	30 ips (25 ips PAL)	30 ips (25 ips PAL)	15 ips (12.5 ips PAL)

Highlighting Record Audio and pressing the button toggles between On and Off. When setting to On, the DVR will record audio from up to four inputs when video is recording.

Highlight the slide bar beside Auto Deletion, and use the Left and Right arrow buttons to adjust the length of time recorded data will be kept from 1 to 999 days. The DVR automatically deletes video recorded earlier than the user-defined period under three conditions: at midnight, whenever the system reboots or whenever the user changes the Auto Deletion settings. Selecting Never will disable the Auto Deletion function.

Highlighting Use Panic Recording and pressing the button toggles between On and Off.

Highlight the Panic Recording – Duration box and set the duration of panic recording. Panic recording will stop automatically after the preset duration as long as the PANIC button is not pressed to stop the panic recording. You can set the dwell from 5 minutes to 1 hour. Select No Limit if you want to stop panic recording manually.

Highlighting the Panic Recording – ips and pressing the button allows you to set the images per second for Panic recording. You can select from 0.10 to 30.0 images per second.

Highlighting the Panic Recording – Quality and pressing the button allows you to set the recorded image quality for Panic recording. You can select from: Very High, High, Standard and Basic.

After you are finished with the General Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Schedule Setup (RECORD → Schedule Tab)

Setting up the Basic Schedule Mode…

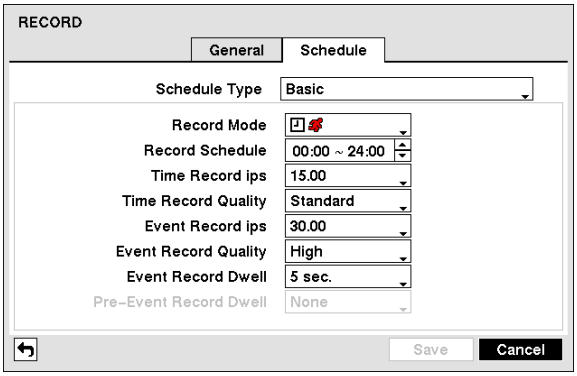


Figure 12 – Schedule (Basic Type) screen.

Highlight the Schedule Type box and press the button. Select Basic to set up the Basic type recording schedule.

Highlight the box beside Record Mode and press the button to change the recording mode that will be used. Choose from: (Time), (Event) and (Time & Event).

When the DVR is in the Time mode, the icon displays at the top-left corner of the screen. The DVR will record and displays the icon at the top-left corner of the screen during the scheduled times.

When the DVR is in the Event mode, the red icon displays at the top-left corner of the screen. The DVR will record and displays the icon at the top-left corner of the screen when any event occurs. When the DVR is in the Pre-Event recoding mode, the yellow icon displays when there is no event, and the DVR is not recording. When the DVR is in the Pre-Event mode, the red and display when any event occurs and the DVR starts recoding.

When the DVR is in the Time & Event mode, the DVR will follow the Time settings and the icon displays. The DVR follows the Event settings and the icon displays.

Highlight the box beside Record Schedule and press the button to change the time range that the scheduled recording will take place. The smallest time segment you can use is 15 minutes.

Highlight the box beside Time Record ips and press the button to set the images per second for Time recording.

Highlight the box beside Time Record Quality and press the button to set the recorded image quality for Time recording.

Highlight the box beside Event Record ips and press the button to set the images per second for the pre- and post-event recording.

Highlight the box beside Event Record Quality and press the button to set the recorded image quality for the pre- and post-event recording.

Highlight the box beside Event Record Dwell and press the button to set the length of time you would like to record for the associated event.

Highlight the box beside Pre-Event Record Dwell and press the button to set the length of time you would like to record prior to the associated event. Selecting None will disable the pre-event recording function.

Setting up the Advanced Schedule Mode…

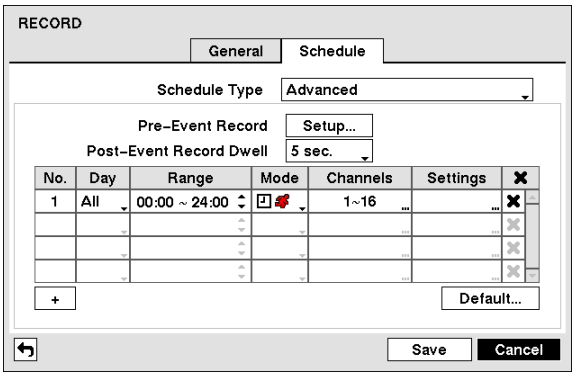


Figure 13 ─ Schedule (Advanced Type) screen.

Highlight the Schedule Type box and press the button. Select Advanced to set up the Advanced type recording schedule. Selecting Advanced Mode allows you to set up individual recording schedule for each event.

Highlight the Setup… box beside Pre-Event Record and press the button. When the DVR is in the Event Record mode it is possible to have it record images before the event occurs. The Pre-Event screen allows you to define how to handle pre-event recording.

The image speed can be set from 0.10 to 30.00 ips (25.00 ips PAL), and image quality can be selectable from Very High, High, Standard and Basic.

You can set the amount of time to record prior to the event by adjusting the Dwell. You can set the Dwell from 5 seconds to 30 minutes. The longer the dwell set, the fewer maximum ips can be set. Selecting None will disable the pre-event recording function.

NOTE: When the DVR is in the Time or Time & Event mode, it ignores the pre-event settings and follows the time settings.

Highlight the box beside Post-Event Record Dwell and press the button to set the length of time you would like to record for the associated event. You can set the Dwell from 5 seconds to 1 minute.

Highlight + and press the button to add a schedule item.

NOTE: The higher the number under the *No.* heading, the higher its priority.

Highlight the box under the Day heading and press the button to change the days that the scheduled recording will take place. Choose from: Sun, Mon, Tue, Wed, Thu, Fri, Sat, M~F, Hol and All.

Highlight the box under the Range heading and press the button to change the time range that the scheduled recording will take place. The smallest time segment you can use is 15 minutes.

Highlight the box under the Mode heading and press the button to change the recording mode that will be used. Choose from: (Time), (Event) and (Time & Event).

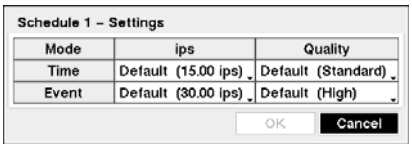
When the DVR is in the Time mode, the icon displays at the top-left corner of the screen. The DVR will record and displays the icon at the top-left corner of the screen during the scheduled times.

When the DVR is in the Event mode, the red icon displays at the top-left corner of the screen. The DVR will record and displays the icon at the top-left corner of the screen when any event occurs. When the DVR is in the Pre-Event recoding mode, the yellow icon displays when there is no event, and the DVR is not recording. When the DVR is in the Pre-Event mode, the red and display when any event occurs and the DVR starts recoding.

When the DVR is in the Time & Event mode, the DVR will follow the Time settings and the icon displays. The DVR follows the Event settings and the icon displays.

Highlight the box under the Channels heading and press the button to select which cameras will be recorded.

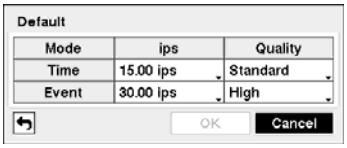
Highlight the box under the Settings heading and press the button to define the recording settings.



You can set the ips and Quality of the recording for any modes you set up in the Mode column. If you do not set the ips and Quality in the Settings column, the DVR will follow the default settings. See below for details.

Highlight the box under the heading and press the button to delete the recording settings. You will be asked to confirm that you want to delete the settings.

Highlight Default… and press the button. The Default screen appears.



Highlighting boxes under ips and pressing the button allows you to set the images per second for Time and Event recording. You can select from 0.10 to 30.0 images per second. Highlighting boxes under Quality and pressing the button allows you to set the recorded image quality for Time and Event recording. You can select from: Very High, High, Standard and Basic.

After you are finished with the Schedule Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Event Menu

Your DVR can be set to detect many different events. You can also determine how it reacts to these events.

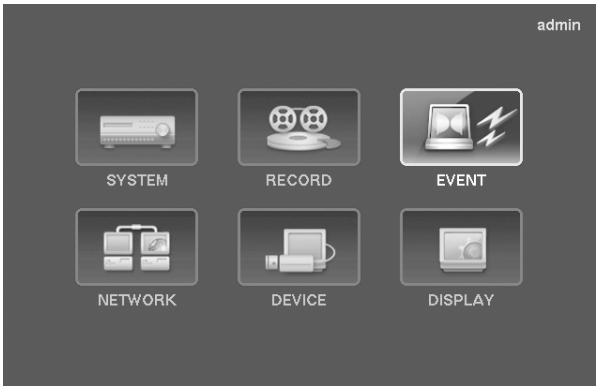


Figure 14 — Event menu.

Motion Event Setup (EVENT → Motion Tab)

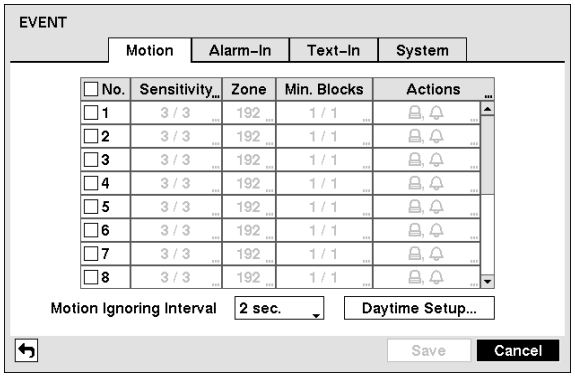
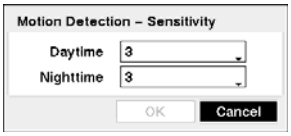


Figure 15 ─ Motion screen.

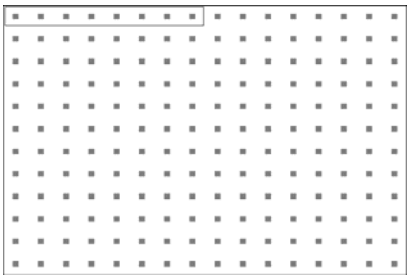
Your DVR has built-in video motion detection. Video motion detection can be turned On or Off for each camera.

Highlighting the box under the Sensitivity heading and pressing the button allows you to adjust the DVR's sensitivity to motion for Daytime and Nighttime independently.



There are five settings with 1 being the least sensitive and 5 being the most sensitive.

You can define the area of the image where you want to detect motion; e.g., a doorway. Highlight the box under the Zone heading, and press the button. The Motion Detection Zone screen displays.



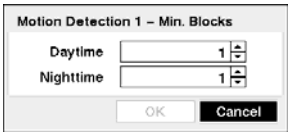
The Motion Detection Zone screen is laid over the video for the selected camera. You can set up motion detection zones by selecting or clearing blocks.

NOTE: You can set up motion zones one block at a time in groups of 8 individual block groups. A block group is positioned within the image area using the Up and Down arrow buttons, and individual blocks within the block groups are selected or cleared using the camera buttons.

Press the button to display the menu screen. The menu on the setup screen has the following functions:

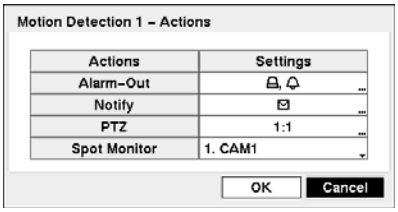
Select ─ Activates highlighted blocks to detect motion.
Clear ─ Deactivates highlighted blocks so that they will not detect motion.
Reverse ─ Activates inactive highlighted blocks and deactivates active highlighted blocks.
Select All ─ Activates all blocks to detect motion.
Clear All ─ Deactivates all blocks so that they will not detect motion.
Reverse All ─ Activates inactive blocks and deactivates active blocks.
Zone View ─ Displays any detected motion within the zone in red.
OK ─ Accepts changes and closes Zone setup.
Cancel ─ Exits Zone setup without saving changes.

You can adjust the minimum number of detection blocks that must be activated to trigger a motion alarm. Highlighting the box under the Min. Blocks heading and pressing the button allows you to adjust the minimum number of detection blocks for Daytime and Nighttime independently.



Smaller numbers provide greater sensitivity because fewer detection blocks must be activated.

Highlighting the box under the Actions heading and pressing the button allows you to set the DVR to react to motion detection differently for each camera.



Highlight the box beside Alarm-Out and press the button. You can associate alarm-out signals (Alarm-Out and Beep) with that camera as you wish. When the DVR detects motion on the selected camera's input, it triggers output signals.

Highlight the box beside Notify and press the button. Highlighting Mail and pressing the button toggles On and Off. When set to On, the DVR will send an e-mail to the address set during NETWORK – Mail setup where you want PTZ cameras to move to whenever the DVR detects motion on the selected camera's input. Highlight OK and press the button to accept your changes.

NOTE: For the Notify action, the notify item you select should be enabled in the NETWORK – Mail setup screen and the DVR should be registered in the RAS (Remote Administration System).

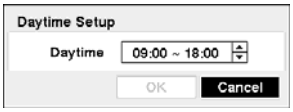
Highlight the box beside PTZ and press the button. A list of PTZ presets appear. Select the preset position for each PTZ camera, where you want PTZ cameras to move to whenever the DVR detects motion on the selected camera's input.

Highlight the box beside Spot Monitor and press the button. A list of a SPOT monitor and cameras appears. A SPOT monitor can be associated with a camera. The DVR will display the associated camera on the SPOT monitor whenever it detects motions on the selected camera.

You can control excessive event logging and remote notification of motions detected after the motion dwell time by adjusting the motion ignoring dwell intervals. Highlight the box beside Motion Ignoring Interval and press the button. A list of intervals ranging from 1 to 10 seconds or Never appears. The DVR will not log and notify motion events occurred during the preset interval range.

NOTE: The record action for motion events will not be affected by the Motion Ignoring function.

Highlighting Daytime Setup and pressing the button allows you to set up the Daytime range.



Highlight the box beside Daytime and press the button. Use the Up and Down arrow buttons to set the Daytime range. The DVR will consider the remaining time range as the Nighttime.

After you are finished with the Motion Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Alarm-In Event Setup (EVENT → Alarm-In Tab)

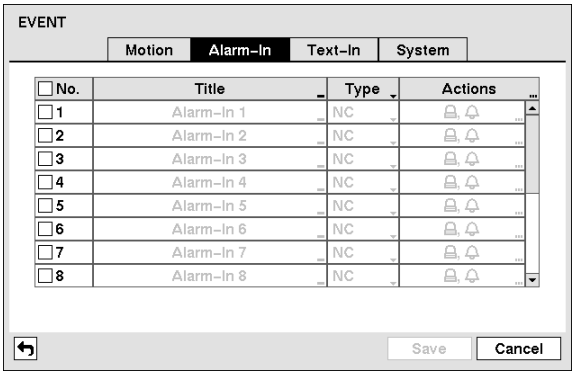


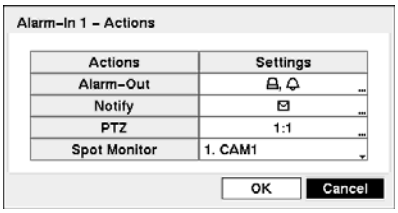
Figure 16 – Alarm-In screen.

The alarm terminal strip on the back of the DVR has inputs associated with each alarm. You can set up each input on the Alarm-In screen. You can turn each input On or Off by highlighting the alarm number and pressing the button.

Each input can be given a title. Highlight the desired Title box and press the button. A virtual keyboard appears allowing you to enter a title name.

Each input can be set as NO (normally open) or NC (normally closed).

Highlighting the box under the Actions heading and pressing the button allows you to set the actions the DVR will take whenever it senses an input on one of its alarm input connectors.



Highlight the box beside Alarm-Out and press the button. You can select alarm-out signals (Alarm-Out and Beep) that you would like to activate whenever the DVR detects an input on the associated alarm input.

Highlight the box beside Notify and press the button. Highlighting Mail and pressing the button toggles On and Off. When set to On, the DVR will send an e-mail to the address set during NETWORK – Mail setup whenever the DVR detects an input on the associated alarm input. Highlight OK and press the button to accept your changes.

NOTE: For the Notify action, the notify item you select should be enabled in the NETWORK – Mail setup screen and the DVR should be registered in the RAS (Remote Administration System).

Highlight the box beside PTZ and press the button. A list of PTZ presets appear. Select the preset position for each PTZ camera, where you want PTZ cameras to move to whenever the DVR detects an input on the associated alarm input.

Highlight the box beside Spot Monitor and press the button. A list of a SPOT monitor and cameras appears. A SPOT monitor can be associated with a camera. The DVR will display the associated camera on the SPOT monitor whenever it detects an input on the associated alarm input.

You can set up the DVR to start panic recording whenever it senses an input on one of its alarm input connectors. Highlight the box beside Panic Record and press the button. A list of Alarm Inputs appears, and you can select which alarm input you want associated with panic recording. The DVR will continue panic recording until an input on the selected alarm input is released as long as the PANIC button is not pressed to stop the panic recording.

After you are finished with the Alarm-In Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Text-In Event Setup (EVENT → Text-In Tab)

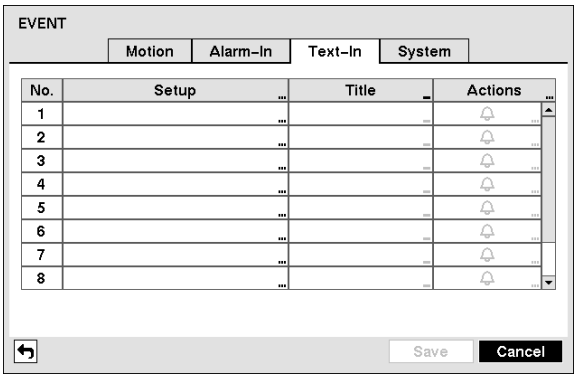
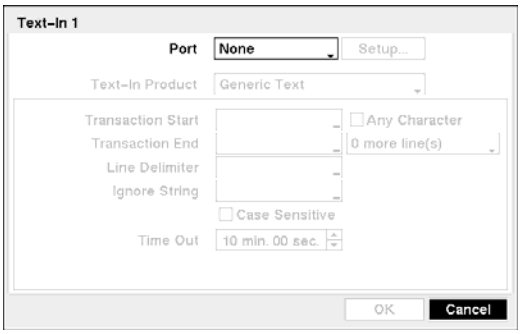


Figure 17 ─ Text-In screen.

The DVR can be set to react to text input from devices such as ATMs (Automated Teller Machines) and POS (Point of Sale; i.e., cash registers). This screen allows you to configure the DVR for each text-in device.

Highlight the box under the Setup heading, and press the button. Selecting the Setup heading changes all the parameters excluding Port settings of all the text input channels.

NOTE: The system performance might be affected when a large quantity of text inputs are detected from several channels at the same time.



Highlight the box beside Port, and press the button. Select from None, RS232, RS485 and USB-Serial (1~8).

NOTE: If you have set the Port as *None*, you will not be able to make any changes to the screen.

NOTE: When using the USB to serial text-in device, do NOT remove the USB cable from the port while the system is running.

Highlight Setup…, and press the button. Use the ATM or POS manufacturer's recommended settings when configuring the RS232, RS485 or USB-Serial ports.

Highlight the box beside Port, and press the button. Select from None, RS232, RS485 and USB-Serial (1~8).

NOTE: If you have set the Port as *None*, you will not be able to make any changes to the screen.

NOTE: When using the USB to serial text-in device, do NOT remove the USB cable from the port while the system is running.

Highlight Setup…, and press the button. Use the ATM or POS manufacturer's recommended settings when configuring the RS232, RS485 or USB-Serial ports.

Highlight the box beside Text-In Product, and press the button. Select your device from the list.

NOTE: The following description is for a *Generic Text Device*. The screen changes for different types of text input devices, and there will be different parameter boxes for you to enter information.

Highlight the box beside Transaction Start, and press the button. Use the virtual keyboard to enter the Transaction Start string. Refer to the device manufacturer's documentation for the text string that the device first sends when a transaction starts.

If you want the DVR to react to any character sent from the text input device, you will want to turn On Any Character. Highlight Any Character, and press the button to toggle between On and Off.

NOTE: If *Any Character* is turned On, you will not be able to enter any text in the *Transaction Start* box.

Highlight the box beside Transaction End, and press the button. Use the virtual keyboard to enter the Transaction End string. Refer to the device manufacturer's documentation for the text string that the device sends when a transaction ends.

Highlight the more line(s) box, and press the button. Select the number of additional lines of text that you want the DVR to record. You can choose from 0 to 10.

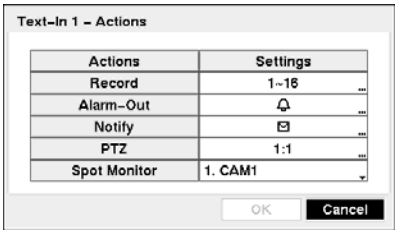
Highlight the box beside Line Delimiter, and press the button. Use the virtual keyboard to enter the character(s) that the device uses to indicate the end of a line. Special characters can be created using ^ and a capital letter; e.g., ^J for NL (New Line), ^M for CR (Carriage Return). Refer to the device manufacturer's documentation for Line Delimiter character(s).

Highlight the box beside Ignore String, and press the button. Use the virtual keyboard to enter any strings of text that you want the DVR to ignore. Refer to the device manufacturer's documentation for text strings that the device sends during transactions, so you will know which ones you do not want recorded.

Highlight the Case Sensitive box, and press the button to toggle between On and Off. Refer to the device manufacturer's documentation to determine if the text strings are Case Sensitive. If the device distinguishes between upper and lower case letters, make certain the Case Sensitive box is turned On.

Highlight the box beside Time Out, and press the button. Set the length of time to wait for the new text string. The DVR will consider a transaction complete if no new text strings are entered between the last text input and the dwell time out. You can adjust the Time Out dwell from 5 seconds to 15 minutes.

Highlighting the box under the Actions heading and pressing the button allows you to set the DVR to react to text input.



Highlight the box beside Record and press the button. A list of cameras appears. You can associate as many cameras with the Text Input as you wish. If the DVR detects text input, it starts recording video from all the associated cameras.

Highlight the box beside Alarm-Out and press the button. A list of Alarm Outputs appears. You associate alarm-out signals (Alarm-Out and Beep) with the Text Input as you wish. When the DVR detects text input, it triggers output signals.

Highlight the box beside Notify and press the button. Highlighting Mail and pressing the button toggles On and Off. When set to On, the DVR will send an e-mail to the address set during NETWORK – Mail setup where you want PTZ cameras to move to when the DVR detects text input. Highlight OK and press the button to accept your changes.

NOTE: For the Notify action, the notify item you select should be enabled in the NETWORK – Mail setup screen and the DVR should be registered in the RAS (Remote Administration System).

Highlight the box beside PTZ and press the button. A list of PTZ presets appear. Select the preset positions for each PTZ camera, where you want PTZ cameras to move to when the DVR detects text input.

Highlight the box beside Spot Monitor and press the button. A list of a SPOT monitor and cameras appears. A SPOT monitor can be associated with a camera. The DVR will display the associated camera on the SPOT monitor whenever it detects an input on the selected text-in device.

After you are finished with the Text-In Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

System Event Setup (EVENT → System Tab)

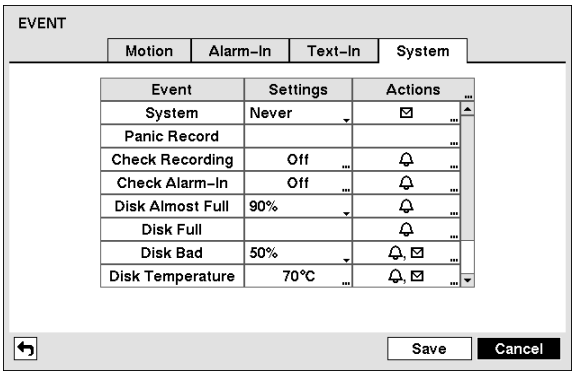
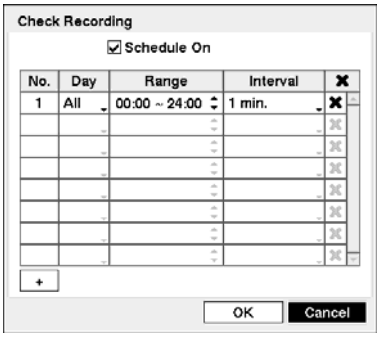


Figure 18 – Health Check screen.

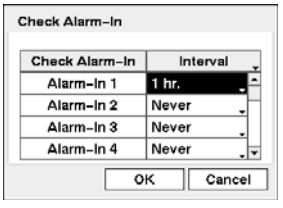
The DVR can be configured to run self-diagnostics and report the results.

Highlighting the box under the Settings heading beside each Event and pressing the button.

- System – Select the interval that you want the DVR to run self-diagnostics on the system.
- Check Recording – Selecting the column allows you to set up the check recording schedule by selecting Schedule On. Selecting + allows you to add a check recording schedule by setting the day, time range and interval that you want the DVR to run self-diagnostics on the recorder. Selecting ✖ allows you to delete a check recording schedule.



- Check Alarm-In – Selecting the column allows you to change interval the DVR to run self-diagnostics on alarm inputs.



- Disk Almost Full ─ Select the percentage level of disk usage at which you want the DVR to trigger an alert.
- Disk Bad ─ Select percentage level of bad disk sectors at which you want the DVR to trigger an alert.
- Disk Temperature ─ Set the temperature threshold and (ºC (Celsius) or ºF (Fahrenheit)). If the temperature of hard disk drive exceeds the defined threshold, the system triggers an alert.

Highlighting the box under the Actions heading beside each Event and pressing the button to set up actions the DVR will take whenever it detects each system event. System events can sound the DVR's internal buzzer and/or notify a number of different devices.

NOTE: The Beep action cannot be set to *System* and *Panic Record* event.

NOTE: For the Notify action, the notify item you select should be enabled in the NETWORK – Mail setup screen and the DVR should be registered in the RAS (Remote Administration System).

After you are finished with the System Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Network Menu

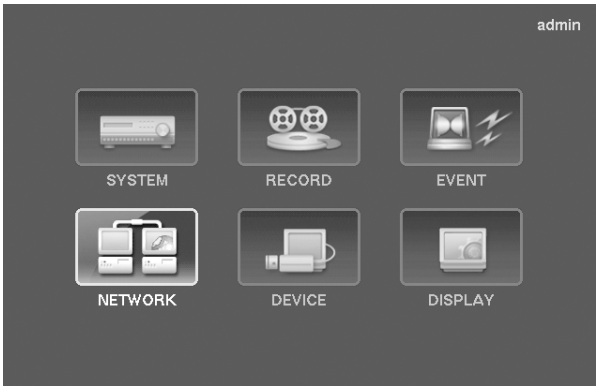


Figure 19 ─ Network Menu.

General Setup (NETWORK → General Tab)

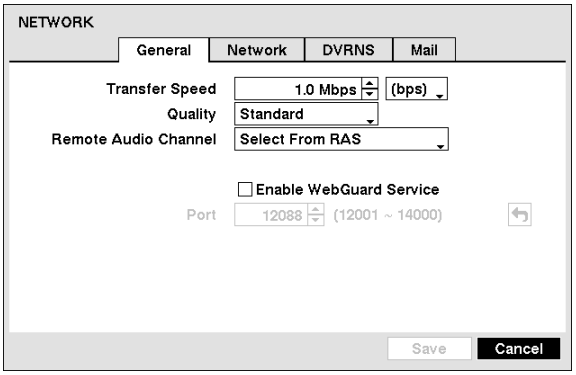


Figure 20 ─ General screen.

Highlight the first box beside Transfer Speed. Press the Up and Down arrow buttons to set the Transfer Speed from 50Kbps to 100Mbps.

Highlight the second box beside Transfer Speed. You can select the unit of measure for the transfer speed between: bps and ips. Press the button to set the transfer speed.

Highlight the box beside Quality and press the button. You can select the Quality from: Very High, High, Standard and Basic. Press the button to set the Quality.

NOTE: The higher Quality settings require higher Transfer Speed settings. The transfer speed you set is the maximum speed. Depending on the network environment, this speed may not be achieved.

NOTE: The local recording speed might be affected by various network bandwidth (Transfer Speed) conditions.

The DVR supports two-way audio communication between a local system and a PC running RAS. Highlighting the box beside Remote Audio Channel and pressing the button allows you to select the audio channel that sends audio to the remote site. Selecting Select From RAS will send audio of the channel selected from RAS.

NOTE: Depending on network conditions, audio might be interrupted or out of synchronization during transmission.

Highlight Enable WebGuard Service and press the button to toggle between On and Off. See *Appendix C — WebGuard* for detailed descriptions of the WebGuard service.

Highlight the box beside Port and press the button. Set the port number used when accessing WebGuard by using the Up and Down arrow buttons to increase or decrease the numbers.

After you are finished with the General Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Network Setup (NETWORK → Network Tab)

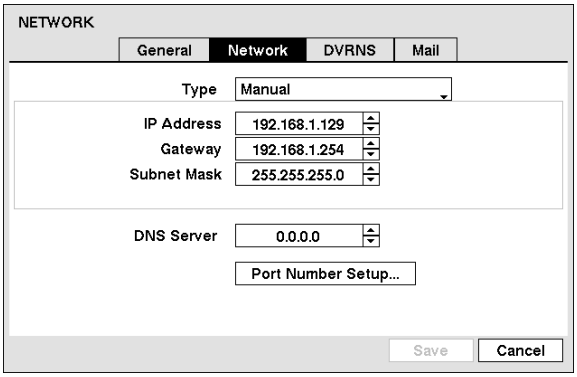


Figure 21 ─ Network (Manual) screen.

Highlight the box beside Type and press the button. You can select the type of network configuration from: Manual, DHCP and ADSL (with PPPoE). Select the desired type and press the button.

Selecting Manual from the Type allows you to set up LAN parameters manually.

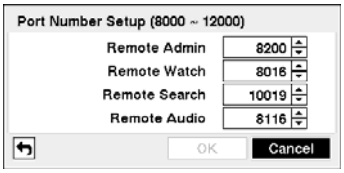
NOTE: You will need to get the appropriate IP Address, Gateway and Subnet Mask from your network administrator.

Change the numbers by highlighting them and using the Up and Down arrow buttons to increase or decrease the number. The factory default LAN settings are:

IP Address: 192.168.1.129
Gateway: 192.168.1.254
Subnet Mask: 255.255.255.0

Highlight the box beside DNS Server. Press the Up and Down arrow buttons to set the IP address of the DNS server.

Highlight Port Number Setup… and press the button. The Port Number Setup screen appears.



Change the numbers by highlighting them and using the Up and Down arrow buttons to increase or decrease the number. The factory default Port settings are:

Remote Admin: 8200
Remote Watch: 8016
Remote Search: 10019
Remote Audio: 8116

NOTE: You will need to get the appropriate Port Numbers for each RAS and WebGuard related program (Admin, Watch, Search and Audio) from your network administrator.

NOTE: The system restarts automatically after changing the port settings.

NOTE: Do NOT use the same port number for two different programs, otherwise, the DVR cannot be connected with the PC running RAS or WebGuard.

CAUTION: When changing the port settings, you must change the port settings on the PC running RAS or WebGuard as well. Refer to the RAS manual for details.

Selecting DHCP from the Type and highlighting Save button reads the current IP address of the DVR configured by DHCP (Dynamic Host Configuration Protocol) network.

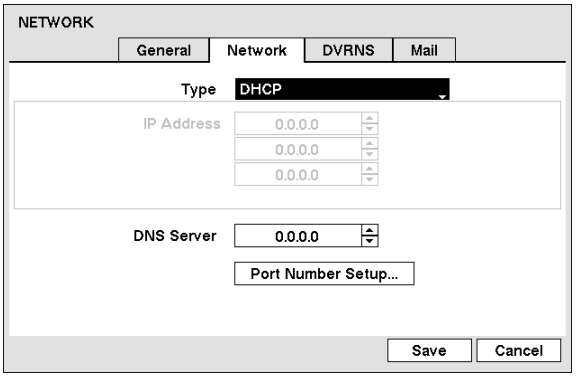


Figure 22 ─ Network (DHCP) screen.

Selecting ADSL (with PPPoE) allows you to set up the ADSL network.

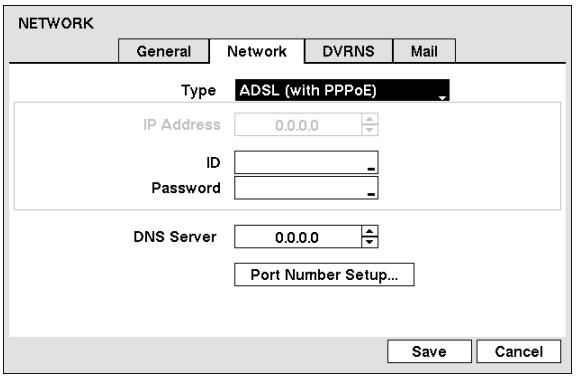


Figure 23 ─ Network (ADSL) screen.

Highlight the box beside ID and press the button. A virtual keyboard appears allowing you to enter the ID for ADSL connection.

Highlight the box beside Password and press the button. A virtual keyboard appears allowing you to enter the password for ADSL connection.

NOTE: Entering the *ID* and *Password* and highlighting *OK* reads the current IP address of the DVR configured by the ADSL network.

NOTE: If the DVR is configured for DHCP or an ADSL network, the IP address of the DVR might change whenever the unit is turned on.

After you are finished with the Network Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

DVRNS Setup (NETWORK → DVRNS Tab)

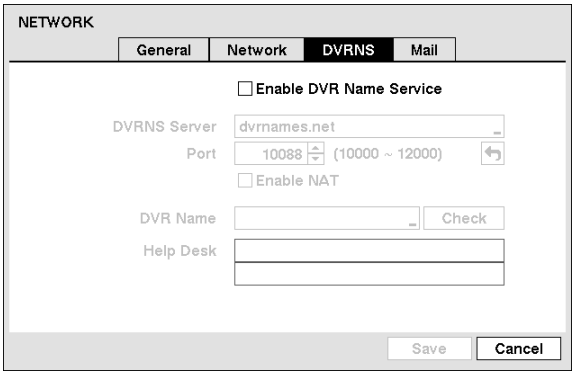


Figure 24 – DVRNS screen.

Highlight Enable DVR Name Service and press the button to toggle between On and Off.

NOTE: The DVRNS (DVR Name Service) allows the DVR to use Dynamic IP addresses for remote connection. When this feature is On, you can access your DVR remotely using the DVR name instead of its IP address. For the DVRNS feature, the DVR should be registered on the DVRNS server.

Highlight the box beside DVRNS Server and press the button. A virtual keyboard appears allowing you to enter the IP address or domain name of the DVRNS server.

NOTE: You will need to get the IP Address or domain name of the DVRNS Server from your network administrator.

NOTE: You can use the domain name instead of IP address if you already set up the DNS Server when setting up the Network.

Highlight the box beside Port and press the button. Set the port number of the DVRNS server using the Up and Down arrow buttons to increase or decrease the numbers.

Highlight Enable NAT and press the button to toggle between On and Off.

NOTE: When using the NAT (Network Address Translation) device, refer to the NAT manufacturer' instructions for the proper network settings.

Highlight the box beside DVR Name and press the button. A virtual keyboard appears allowing you to enter the DVR name to be registered on the DVRNS server.

Highlight the Check box and press the button to check whether or not the name you entered can be used.

NOTE: The DVR name you entered should be checked by selecting *Check*, otherwise the DVRNS changes will not be saved.

NOTE: When entering no name or a name already registered on the DVRNS server, an error message displays.

After you are finished with the DVRNS Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Mail Setup (NETWORK → Mail Tab)

The DVR can be set up to send an email or to contact a computer running RAS (Remote Administration System) when an event occurs.

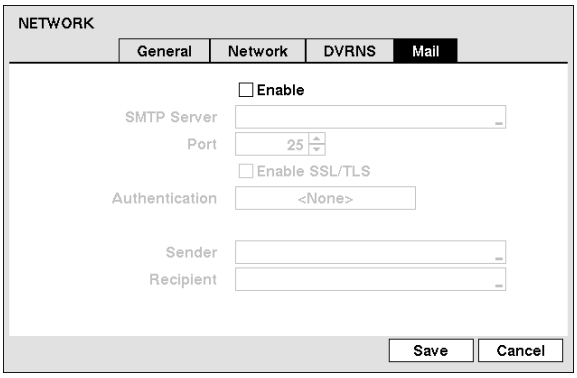


Figure 25 ─ Mail screen.

Highlight Enable and press the button to toggle between On and Off. You will only be able to change the settings if Mail is enabled.

Highlight the box beside SMTP Server and press the button. A virtual keyboard appears that you can use to enter the IP address or domain name of the SMTP server.

NOTE: You will need to get the IP Address or domain name of the SMTP Server from your network administrator.

NOTE: You can use the domain name instead of IP address if you already set up the DNS Server when setting up the Network.

Highlight the box beside Port and press the button. Use the arrow buttons to enter the SMTP Server port number obtained from your system administrator. The default port number is 25.

Highlight Enable SSL/TLS and press the button to toggle between On and Off. When it is On, the DVR can send an email via an SMTP server requiring SSL (Secure Sockets Layer) authentication.

Highlight the box beside Authentication and press the button. An Authentication screen appears.

Highlight Use and press the button to toggle between On and Off. Highlight the box beside User/Password and press the button. A virtual keyboard appears allowing you to enter the user ID and password.

Highlight the box beside Sender and enter the sender's e-mail address. Use the virtual keyboard to enter the e-mail address.

NOTE: The e-mail address must include the "@" character to be a valid address.

Highlight the box beside Recipient and enter the recipient's e-mail address. Use the virtual keyboard to enter the e-mail address.

After you are finished with the Mail Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Device Menu

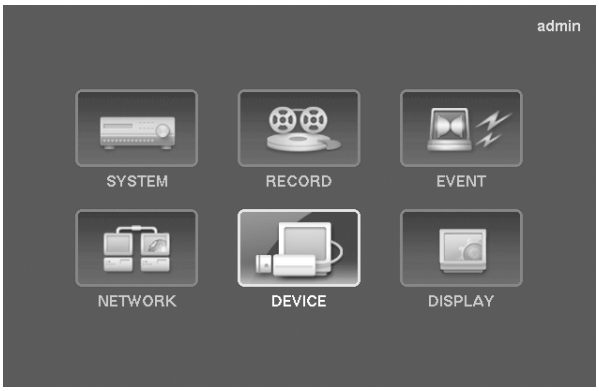


Figure 26 – Device Menu.

Camera Setup (DEVICE → Camera Tab)

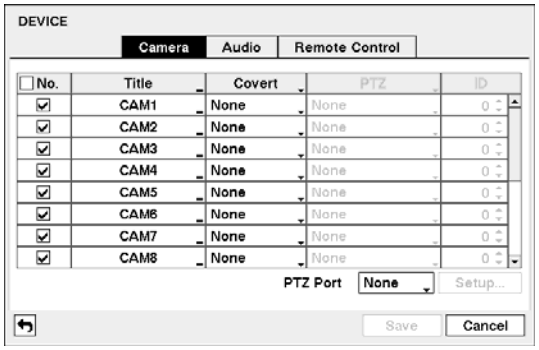


Figure 27 – Camera screen.

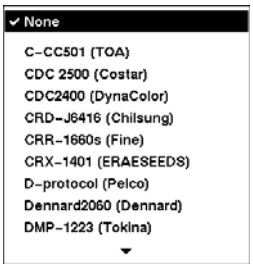
You can turn the camera number On or Off, and you can change the Title of each camera using the virtual keyboard. You can also determine which cameras will display on the monitors by selecting None, Covert 1 or Covert 2 from a drop-down list in the Use column.

NOTE: When selecting the *Covert 1*, the DVR displays the camera title and status icons on the covert video. When selecting the *Covert 2*, the DVR displays only camera title on the covert video.

NOTE: A user who does not have *Covert Camera View* authority cannot view video from cameras set to *Covert 1* or *Covert 2* in both the live monitoring and playback modes.

NOTE: You will only be able to set up PTZ devices if the PTZ port is set to RS232 or RS485.

Highlight the box under the PTZ heading for the PTZ camera you wish to configure and press the button. A list of PTZ devices appears.

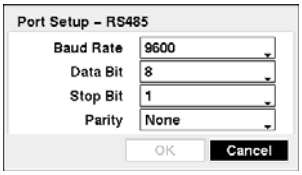


Select your camera from the list and press the button. You will need to connect the camera to the RS232 or RS485 connector on the back of the DVR following the camera manufacturer's instructions.

You can assign IDs to each camera by highlighting the box under the ID heading and pressing the button. Change the number by highlighting it and using the Up and Down arrow buttons to increase and decrease the number. The PTZ ID number can be set from 0 to 256.

Highlight the box beside PTZ Port and press the button to select the port to communicate with PTZ cameras.

Highlight Setup… and press the button. The Port Setup screen appears.



Configure the port's setting based on the PTZ camera manufacturer's instructions.

After you are finished with the Camera Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Audio Setup (DEVICE → Audio Tab)

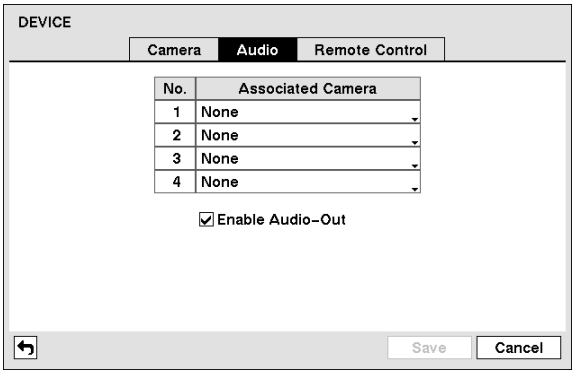


Figure 28 – Audio screen.

The DVR can record up to four audio inputs. Highlight the box beside the input and press the button. A list of cameras appears, and you can select which camera you want associated with that audio input.

Highlight Enable Audio-Out and press the button. This toggles between enabling and disabling audio out.

After you are finished with the Audio Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Remote Control Setup (DEVICE → Remote Control Tab)

Highlight Remote Control in the Devices menu and press the button. The Remote Control setup screen allows you to select a port and make correct settings for a remote keyboard.

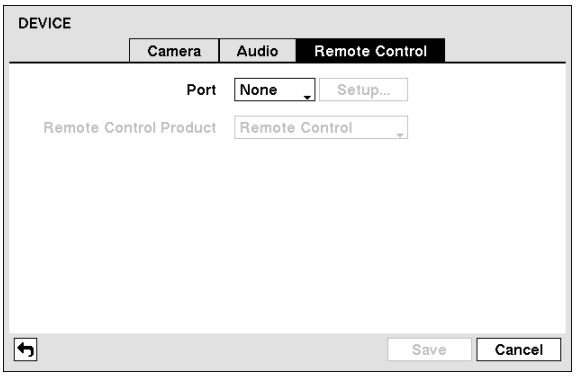


Figure 29 ─ Remote Control setup screen.

Highlight the box beside Port and select from None, RS232 and RS485. If the RS232 port and RS485 port are in use for PTZ control, networking or text input, the remote keyboard cannot be configured.

Highlight Setup… and select the correct Baud Rate, Parity, Data Bits and Stop Bits for the device you are connecting to the DVR.

Highlight the box beside Remote Control Product and select the device from the list.

You can save your Remote Control settings by highlighting Save and pressing the button. Selecting Cancel exits the screen without saving the changes.

After you are finished with the Remote Control Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Display Menu

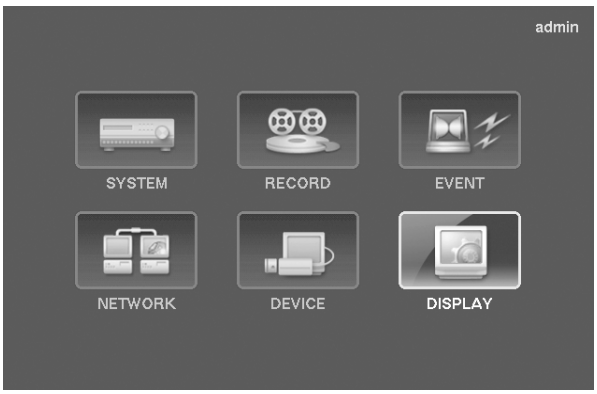


Figure 30 ─ Display Menu.

OSD Setup (DISPLAY → OSD Tab)

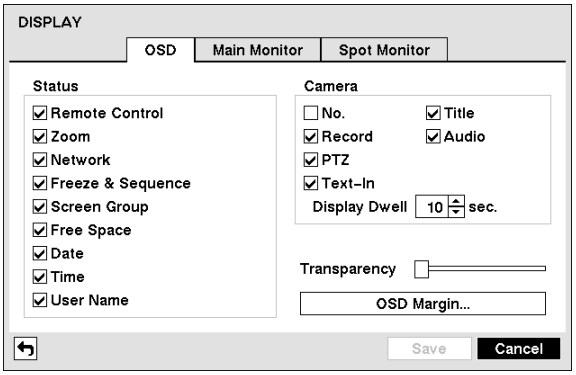


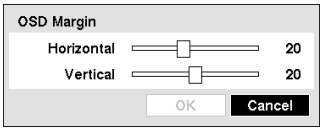
Figure 31 ─ OSD screen.

Highlighting an item and pressing the button toggles that item On and Off. When an item is On, there is a checkmark in the box beside it. The following items can be turned On or Off:

- Remote Control — The icon displays when the DVR can be controlled by the infrared remote control.
- Zoom ─ The icon displays on the enlarged video.
- Network ─ The icon displays when the unit is connected to a network via Ethernet.
- Freeze & Sequence ─ The icon displays while in the Freeze mode, and the displays while in the Sequence mode.
- Screen Group ─ The number of screen group displays when the DVR is not in the 4x4 display mode of the 16-channel DVR, and 3x3 mode of the 8-channel DVR.
- Free Space ─ The icon displays when the DVR is in the Recycle mode, and the percentage of available storage space displays when the DVR is not in the Recycle mode.
- Date/Time ─ The current date and time information displays.
- User Name ─ The name of the current user logged in displays.
- Camera No. ─ The camera number displays at the top-left corner of each camera screen.
- Camera Title ─ The camera title displays at the top-left corner of each camera screen.
- Record ─ The record related icons display on each camera screen.
- Audio ─ The icon displays on each camera screen for which the DVR can play live audio on a local system, and the icon displays on each camera for which the DVR is sending audio to a PC running RAS.
- PTZ ─ The icon displays on each PTZ camera screen.
- Text-In ─ The text input strings display on the screen. You can adjust the Display Dwell time (sec.) for the text input strings displayed on the screen.

You can adjust the transparency of the setup screens by highlighting Transparency and using the Left and Right arrow buttons.

Highlighting OSD Margin… and pressing the button displays how OSD text will be displayed on the monitor.



You can adjust the horizontal and vertical margins so that text and icons will not be hidden beyond the edges of the monitor.

After you are finished with the OSD Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Main Monitor Setup (DISPLAY → Main Monitor Tab)

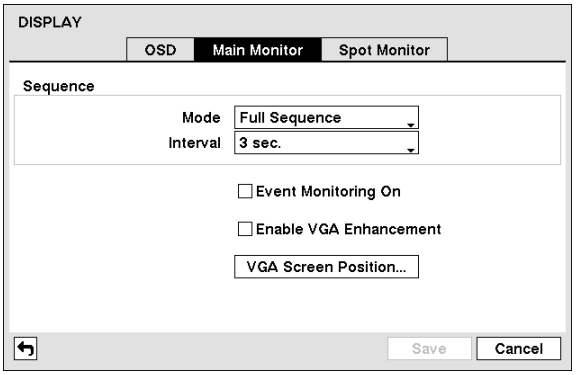


Figure 32 – Main Monitor screen.

You can adjust the display dwell time for each camera displayed on the main monitor. Highlight the box beside Mode and press the button. You can select between Full Sequence and Cameo Sequence.

Pressing the SEQUENCE button causes the DVR to sequence cameras, and the DVR can sequence cameras in two modes: "Full" and "Cameo". In the Full mode, the DVR sequences through the cameras and displays them full screen. In the Cameo mode, the bottom right window in a multi-screen format sequences through the cameras.

NOTE: Any cameras that are Off, have lost video or are set to Covert (unless the user has authority to view covert cameras) will be excluded from the Cameo sequence.

You can define the screen layout in a variety of formats and set the DVR to sequence through the different screen layouts (pages) so that all the cameras will be displayed. You can also set up the DVR to display one camera or a group of cameras all the time while cycling through the remaining cameras in a "cameo" window. This can be done with one camera displayed full screen while displaying the cameo window as a PIP (picture in picture), or displaying the cameras in a grid pattern with the bottom right window as the cameo.

NOTE: Sequence cannot be used in the 4x4 display mode of the 16-channel, and 3x3 mode of the 8-channel DVR.

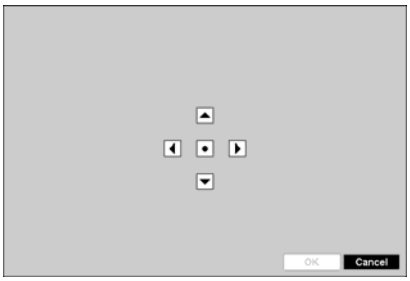
You can adjust the display dwell time by highlighting the box beside Interval and pressing the button. You can select dwell intervals ranging from 1 second to 1 minute.

Highlight Event Monitoring On and press the button. Pressing the button toggles between On and Off. When it is On, the DVR will display the camera associated with the event when an event occurs.

Highlight Enable VGA Enhancement and press the button toggle On and Off. When it is On, the DVR provides clearer live video by reducing visual defects called interlace artifacts.

NOTE: When enabling the VGA Enhancement function, the recording speed will decrease by half.

Highlight VGA Screen Position… and press the button allows you to adjust the screen position on the VGA monitor.



Use the arrow buttons on the setup screen to move the VGA screen position in the direction you want. Selecting the default button at the center cancels the screen positioning operation and reloads the default position.

After you are finished with the Main Monitor Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Spot Monitor Setup (DISPLAY → Spot Monitor Tab)

Figure 33 – Spot Monitor screen.

You can define which cameras display sequentially on the Spot Monitor. Highlight the box in the Channels column and press the button.

After you are finished with the Spot Monitor Screen, you can highlight Save and press the button to save the changes and exit the screen. If you do not wish to save the changes, highlight Cancel and press the button to exit the screen.

Chapter 4 ─ Operation

NOTE: This chapter assumes your DVR has been installed and configured. If it has not, please refer to Chapters 2 and 3.

The DVR's controls are similar to a VCR. As with a VCR, the main functions are recording and playing back video. However, you have much greater control over recording and playing back video. You can establish recording schedules based on time of day and day of the week. The DVR allows you to search through the recorded video using much more sophisticated tools than those available with VCRs. Additional DVR features that are not available with VCRs are remote control and viewing, and recording video at the same time you are watching previously recorded video.

The front panel controls are described in *Chapter 3 ─ Configuration*.

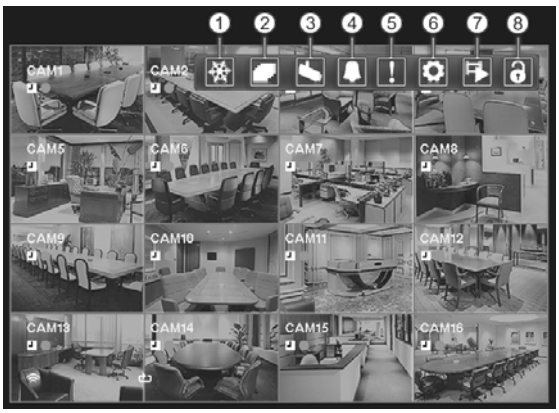
Turning on the Power

Once you have installed the DVR following the instructions in *Chapter 2 ─ Installation*, it is ready to record.

Live Monitoring

As soon as the DVR completes its initialization process, it will begin showing live video on the attached monitor and playing live audio through the attached speaker. The default mode is to display all cameras at once. Pressing any camera button will cause that camera to display full screen. It displays live video and plays live audio until the user enters another mode.

While in the live monitoring mode, press the MENU button displays the following Live Monitoring menu at the top of the screen. Pressing the MENU button again hides the menu. You can navigate through menus and items by pressing the arrow buttons.



① Freeze
② Sequence
③ Camera Menu
④ Alarm Reset
⑤ Panic
⑥ Setup
⑦ Search Mode
⑧ Login/Logout

Figure 34 ─ Live Monitoring menu.

NOTE: The Live Monitoring menu also can be displayed by moving the mouse pointer to the top of the screen.

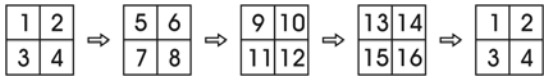
Live Monitoring Menu

Freeze

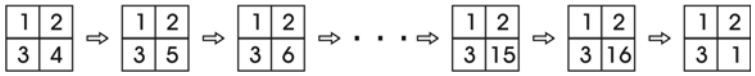
Selecting (Freeze) in the Live Monitoring menu will freeze the current image on the screen until you select again. It is the same as pressing the (Play/Pause) button on the front panel. While in the Freeze mode, the icon displays in bottom-left corner if Freeze is selected in the Display setup screen (OSD tab).

Sequence

Selecting (Sequence) in the Live Monitoring menu causes the cameras to display sequentially. It is the same as pressing and holding the SEQUENCE button on the front panel for three seconds or longer. When in one of the multi-view formats, pressing this button will cause the DVR to go through predefined screen layouts (Full Sequence). Or, the bottom, right screen will display live cameras sequentially (Cameo Sequence). For example, if you press the SEQUENCE button in the 2x2 format, the DVR changes pages as follows:



< Full Sequence >



< Cameo Sequence >

Selecting again in the Live Monitoring menu exits the Sequence mode. While in the Sequence mode, the icon displays in bottom-left corner if Sequence is selected in the Display setup screen (OSD tab). If all the cameras in a page are Off, or have lost video or are set to Covert (unless the user has authority to view covert cameras), that page will be excluded from the sequence.

NOTE: The *Full Sequence* for the full sequence monitoring and the *Cameo Sequence* for the cameo sequence monitoring should be selected in the Display setup screen (Main Monitor tab).

Camera Menu

Selecting (Camera Menu) in the Live Monitoring menu displays the following Camera Menu.

- PTZ: Selecting PTZ and choosing the camera number allows you to control the selected camera as long as it has Pan, Tilt and Zoom capabilities. It is the same as pressing the PTZ button on the front panel. Refer to the following *PTZ Mode* section for details.
- Zoom: Selecting Zoom and choosing the camera number zooms the current image of the selected camera on the screen. It is the same as pressing the ZOOM button on the front panel. Selecting Zoom again in the Camera Menu again exits the Zoom mode. Refer to the following *Zoom Mode* section for details.
- Audio: Selecting Audio toggles audio output On and Off.
- Color Control: Selecting Color Control and choosing the camera number allows you to control brightness, contrast, hue and saturation for each camera for the selected camera if a user who has Color Control authority logs into the system. It is the same as pressing and holding a camera button for a few seconds.

NOTE: It is important that cameras and monitors are correctly installed and adjusted prior to making any image adjustments using the DVR's controls.

NOTE: Any image adjustments you make will be applied to both the live video on the monitors and the recorded video.

- Spot Monitor: Selecting Spot Monitor allows you to select the camera you want to display on a Spot monitor. Refer to the following *Spot Monitoring* section for details.

NOTE: The Camera Menu also can be displayed by clicking the right mouse button on the screen while in the live monitoring mode.

Alarm Reset

Selecting (Alarm Reset) in the Live Monitoring menu resets the DVR's outputs including the internal buzzer during an alarm. It is the same as pressing the ALARM button on the front panel.

Panic

Selecting (Panic) in the Live Monitoring menu starts panic recording of all cameras, and selecting again stops panic recording. It is the same as pressing the PANIC button on the front panel.

Setup

Selecting (Setup) in the Live Monitoring menu enters the Main Setup screen. Refer to *Chapter 3 — Configuration* for detailed descriptions of system setup.

Search Mode

Selecting (Search Mode) in the Live Monitoring menu exits the live monitoring mode and enters the search mode. It is the same as pressing the PLAYBACK button on the front panel.

Login/Logout

Selecting (Login) in the Live Monitoring menu accesses the Login screen, and you will be asked to select a User and enter the password to log into the system. Selecting (Logout) in the Live Monitoring menu displays the Logout screen asking you to confirm whether or not you want to log out the current user.

PTZ Mode

If a user who has PTZ Control authority logs into the system, the user can control PTZ cameras. The DVR will control cameras with Pan, Tilt and Zoom capabilities. Press and hold the PTZ button for two seconds or longer to display the PTZ camera menu and enter the PTZ mode, and press the button again to exit the PTZ mode.

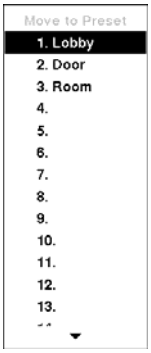
Select the PTZ camera you wish to control. The icon PTZ flickers on the PTZ camera screen. You can control the camera using front panel control buttons, by setting up presets or by selecting the expanded PTZ features. To use the front panel buttons, press the Left and Right arrow buttons to pan left and right. Press the Up and Down arrow buttons to tilt the camera up and down. Press the camera button 1 to zoom in, and press the button 2 to zoom out. You can use the button 3 and button 4 to focus the image. You can establish preset positions for PTZ cameras. Press the camera button 6 to establish Presets. You can quickly move PTZ cameras to Preset positions. Press the camera button 5 to view an establish camera Preset position.

Figure 35 — PTZ Select Camera menu.

You can save camera position settings as "presets" so that you can go directly to desired views.

Once you have the camera at the desired settings, press the button, and the PTZ Preset dialog box will appear. Select the number you want to assign to the preset and press the (Play/Pause) button. Use the virtual keyboard to enter the preset name.

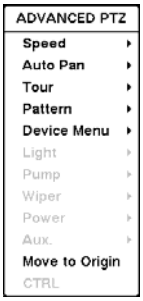
Figure 36 ─ PTZ Preset screen.



Press the button to load the PTZ preset and the Preset View dialog box will appear. Select the desired preset and press the button to load the preset.

Figure 37 ─ Preset View screen.

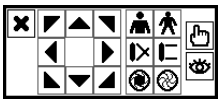
Pressing the MENU button displays the following PTZ menu.



Set the feature you wish to control by selecting it from the menu. Refer to the camera manufacturer's instructions for the proper settings. Depending on the camera specifications, some features may not be supported.

Figure 38 ─ PTZ menu.

You can use a mouse for convenient PTZ control. Position the mouse pointer at the bottom of the screen, and the following PTZ toolbar will display.



Zoom In / Out
Iris Open / Close
Focus Near / Far
Set / Load Preset

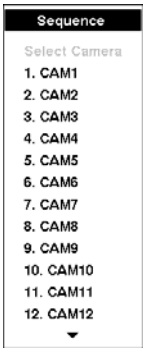
Clicking on the left side exits the toolbar. If you want to display the toolbar again, position the mouse pointer at the bottom of the screen. Change the toolbar location by clicking the empty space on the left side of the toolbar and drag it to where you want it located on the screen. Use the arrow buttons on the toolbar to pan or tilt the camera in the direction you want.

Zoom Mode

You can enlarge an area of the video by pressing the ZOOM button. For a few seconds after pressing the ZOOM button, a rectangle displays on the screen. A rectangle shows the area that will be enlarged. You can move the rectangle around using the arrow buttons. Pressing the (Play/Pause) button in the Zoom mode enlarges the area in rectangle. Exit the Zoom mode by pressing the ZOOM button. While in the Zoom mode, the icon displays if Zoom is selected in the Display setup screen (OSD tab).

Spot Monitoring

You can select the camera you want to display on a Spot Monitor. Press and hold the SPOT button on the front panel for two seconds or longer displays the Sequence Menu.



Select the camera to be displayed on the Spot Monitor. Selecting Sequence from the menu displays more than one camera on a Spot Monitor sequentially. Select Sequence again to stop sequencing on the Spot Monitor. Any cameras that are Off or have lost video or are set to Covert (unless the user has authority to view covert cameras) will be excluded from the sequence. When the Spot Monitor is in the sequence mode, you can set the camera's display dwell time. Refer to *Chapter 3 – Configuration – Display Menu* section for details.

Figure 39 ─ Sequence menu.

Active Cameo Mode

You can enter the Active Cameo mode by pressing and holding the CAMEO button for two seconds or longer in any multi-view format or selecting Group Edit in the Mouse display menu. The yellow outline surrounding the video indicates the active cameo, and pressing the arrow buttons moves the active cameo. Pressing the (Play/Pause) button exits the Active Cameo mode. Selecting Exit Group Edit in the cameo menu displayed when pressing the CAMEO button also exits the Active Cameo mode. The active cameo mode will remains in effect for 15 seconds if there is no further operation.

In active cameo mode, press the button for the camera you want to display in the active cameo. After setting the camera number to active cameo, the DVR moves the active cameo to the next cameo. When the camera number exists on the current screen, the active cameo is changed with the existing camera number. When the camera number does not exist on the current screen, the active cameo is replaced by the camera number. You can change the screen layout in this way.

Event Monitoring

When an event occurs, the DVR will display the camera associated with the event if Event Monitoring On is selected in the Display setup screen (Main Monitor tab).

How the cameras are displayed depends on the number of cameras associated with the event. If one camera is associated with the event, the DVR will display the camera full screen. If two to four cameras are associated with the event, the DVR will display the cameras on a 2x2 screen. If five to nine cameras are associated with the event, the DVR will display the cameras on a 3x3 screen. If 10 or more cameras are associated with the event, the DVR will display the cameras on a 4x4 screen.

Event monitoring lasts for the dwell time set for event recording. After the dwell time has elapsed, the monitor returns to the previous screen unless another event has occurred. If you want to return to the live monitoring mode before the dwell time has elapsed, press the DISPLAY button or one of the camera buttons.

Covert Camera

If a camera is set up as Covert 1 in the Camera setup screen (Settings tab), that camera will not be displayed unless a user with Covert Camera View authority logs into the system. However the camera title and status icons will be displayed on the monitor.

If a camera is set up as Covert 2 in the Camera setup screen (Settings tab), that camera appears to be Off unless a user with Covert Camera View authority logs into the system. The camera title will be grayed out and status icons will not be displayed on the monitor.

NOTE: When a camera is set up as *Covert 1*, the DVR displays the camera title and status icons on the covert video. When set up as *Covert 2*, the DVR displays only the camera title on the covert video.

If a user who has Covert Camera View authority logs into the system, the user can view video from cameras set to Covert 1 or Covert 2 including the camera titles and status icons.

Using a Mouse

You can use a mouse instead of the front panel buttons to perform many of the DVR functions. In the Live Monitoring mode or Search mode, moving the mouse pointer to the left edge of the screen displays the following Mouse Display menu.

① Full Screen
② PIP
③ 2x2
④ 3x3
⑤ 4x4
⑥ Previous Group
⑦ Next Group
⑧ OSD

Figure 40 — Mouse Display menu.

Full Screen

Selecting (Full Screen) in the Mouse Display menu and choosing the camera number button displays the selected camera full screen. It is the same as pressing the individual camera buttons on the front panel or clicking the left mouse button on a camera image when in one of the multiview formats (i.e., 2x2, 3x3 or 4x4). Clicking the left mouse button on the screen again returns to the previous display mode.

PIP, 2x2, 3x3, 4x4

Selecting , , or (PIP, 2x2, 3x3 or 4x4) in the Mouse Display menu displays the cameras in the selected multiview screen mode (PIP, 2x2, 3x3 or 4x4). Selecting each display mode is the same as pressing the DISPLAY button on the front panel or scrolling the mouse wheel up and down when in one of the multiview formats (i.e., 2x2, 3x3 or 4x4).

NOTE: The PIP display mode will not be supported in the search mode.

Previous Group, Next Group

Selecting or (Previous Group or Next Group) in the Mouse Display menu moves to the previous or next page. It is the same as pressing the GROUP button on the front panel.

OSD

Selecting (OSD) in the Mouse Display menu toggles OSD On and Off.

Recording Video

Once you have installed the DVR following the instructions in *Chapter 2 — Installation*, it is ready to record. The DVR will start recording based on the settings you made in the Record setup screen. See *Chapter3 — Configuration.*

Recycle On or Recycle Off. The factory default is Recycle On. It does this by recording over the oldest video once the hard disk is full. Setting the DVR to Recycle Off causes it to stop recording once the hard disk is full.

H.264 or MPEG-4. The factory default codec is H.264. When set to H.264, the DVR can record more images by compressing more effectively than using MPEG-4. However, the recording speed might decrease depending on the display option and DVR's operation mode. Refer to the *Chapter 3 — Configuration, Record Menu* and *Display Menu* for details.

Standard (CIF), High (Half D1) or Very High (D1). The factory default resolution is Standard. When set to Standard, the DVR has a maximum recording speed of 120 ips (100 ips PAL). When set to High, the DVR has a maximum recording speed of 60 ips (50 ips PAL). When set to Very High, the DVR has a maximum recording speed of 30 ips (25 ips PAL).

Pressing the PANIC button starts panic recording of all cameras, and pressing the button again stops panic recording. If you set the Panic Recording Duration in the Record Screen, panic recording will stop automatically according to the preset duration as long as the PANIC button is not pressed.

NOTE: When the DVR is not in the Recycle mode and all available storage space has been used, panic recording will not operate.

Although you will be able to record without changing the unit from its original factory settings, you will want to take advantages of the DVR's many tools. See *Chapter 3 — Configuration* for detailed descriptions of the recording mode options.

Panic Recording

Pressing the PANIC button starts panic recording of all cameras, and pressing the button again stops panic recording. If you set the Panic Recording Duration in the Record General setup screen, panic recording will stop automatically according to the preset duration as long as the PANIC button is not pressed.

NOTE: When the DVR is not in the Recycle mode and all available storage space has been used, panic recording will not operate.

Recording Audio

If the DVR was set up to record audio, it will record audio from up to four inputs when video is recording.

NOTE: Make certain you comply with all local and federal laws and regulations when recording audio.

Playing Recorded Video

If a user who has Search authority logs into the system, the user can view recorded image. Once video has been recorded, you can view it by pressing the PLAYBACK button. When playing video for the first time, the DVR will display the most recent image. When playing video subsequent times, the DVR will start playing video from the last recalled image. Recorded audio will be played when the DVR displays a camera with recorded audio in full screen mode.

NOTE: Only the administrator and users with *Covert Camera View* authority can view video from covert cameras. The covert cameras in the playback mode are determined by the current camera settings.

Camera Buttons (1 to 16): Pressing the individual camera buttons will cause the selected camera to display full screen.

Arrow Buttons: Pressing the ◀◀ button plays video backward at high speed. Pressing the button again toggles the playback speed from ◀◀, ◀◀◀ and ◀◀◀◀. Pressing the ▶▶ button plays video forward at high speed. Pressing the button again toggles the playback speed from ▶▶, ▶▶▶ and ▶▶▶▶. When in the pause mode, pressing the ▶ button moves to the next image and pressing the ◀ button moves to the previous image.

Play/Pause Button: Pressing the ⏯ button plays back images at regular speed or pauses playing video.

Cameo Button: Pressing and holding the button for two seconds or longer enters the cameo mode. The yellow outline surrounding the video indicates the active cameo, and pressing the arrow buttons moves the active cameo. Pressing the desired camera button in the active cameo edits the cameo and displays the video of selected camera. Pressing the ⏯ (Play/Pause) button exits the Active Cameo mode. Selecting Exit Group Edit in the cameo menu displayed when pressing the CAMEO button also exits the Active Cameo mode.

NOTE: A cameo is defined as any cell within multi-screen display. The cameo mode allows you to change the screen layout by editing the cameo.

Playback Button: Pressing the PLAYBACK button enters the playback mode, and pressing the button again exits the playback mode. When entering the playback mode, video is paused. Pressing the ⏯ (Play/Pause) button plays back video at regular speed. The screen displays ❙❙ when the DVR is in the Pause mode and the screen displays ▶ when the DVR is playing back video.

ZOOM Button: Pressing the ZOOM button zooms in the current image on the screen.

DISPLAY/SPOT Button: Pressing the DISPLAY/SPOT button toggles different display formats. The available formats are: 2x2, 3x3 and 4x4. Pressing and holding the button for two seconds or longer allows you to select which cameras will display on the Spot monitor.

GROUP Button: Pressing the GROUP button changes the screen from the current camera group to the next camera group, and the screen displays page number.

You can use a mouse for convenient playback control. Position the mouse pointer on the playback screen, and the following Record Table Search (Compact View Mode) screen will display. The individual controls on the toolbar perform the following functions as described below:

- Go to the previous image
- Play
- Go to the next image
- Fast backward play
- Fast forward play

Searching Video

While in the search mode, press the MENU button displays the following Search menu at the top of the screen. Pressing the MENU button again hides the menu. You can navigate through menus and items by pressing the arrow buttons.

① Search
② Go To
③ Export
④ Camera Menu
⑤ Alarm Reset
⑥ Panic
⑦ Data Source
⑧ Exit

Figure 41 — Search menu.

NOTE: The Search menu also can be displayed by moving the mouse pointer to the top of the screen.

Search Menu

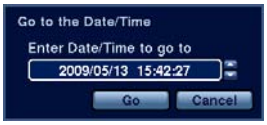
Search

Selecting (Search) in the Search menu allows you to search using a recording table (Record Table Search), select video from the event log (Event Log Search), searches text input strings (Text-In Search) or searches motion events (Motion Search). See the following *Event Log Search*, *Record Table Search*, *Motion Search* and *Text-In Search* sections for details.

Go To

Selecting (Go To) in the Search menu displays the following GO TO menu.

- Go to the First: Selecting Go to the First displays the first recorded image.
- Go to the Last: Selecting Go to the Last displays the last recorded image.
- Go to the Date/Time: Selecting Go to the Date/Time displays the Go to the Date/Time screen.



Move the cursor over the date and time and press the (Play/Pause) button. You can use the Left and Right arrow buttons to highlight the year, month, day, hours, minutes and seconds. Use the Up and Down arrow buttons to change to the date and time you want to search for video.

Once you have set the date and time you want, press the button. Then highlight Go and press the button. The selected date and time will display. (If no video was recorded during the selected time, a message appears alerting you that no image was recorded at that time.) The button and arrow buttons can now be used to review the surrounding video.

Export

Selecting (Export) in the Search menu allows you to clip a video segment and save it. It is the same as pressing the CLIP COPY button on the front panel. See the following *Clip Copy* section for details.

- A–B Clip-Copy: Selecting A–B Clip-Copy will set the starting point of the video to be clip copied, and the icon displays at the bottom-left corner of the screen. Selecting A–B Clip-Copy again will set the ending point of the video to be clip copied and displays the Clip-Copy screen.
- Clip-Copy: Select Clip-Copy, and the Clip-Copy screen appears to allow clip copy setup.

Camera Menu

Selecting (Camera Menu) in the Search menu displays the following Camera Menu.

- Zoom: Selecting Zoom and choosing the camera number zooms the current playback image of the selected camera on the screen. It is the same as pressing the ZOOM button on the front panel. Selecting Zoom again exits the Zoom mode.
- Audio: Selecting Audio toggles audio playback On and Off. Recorded audio will be played when the DVR displays a camera with recorded audio in full screen mode.
- Enable De-Interlace: Selecting Enable De-Interlace turns the de-interlace filters on.

NOTE: The video signal has a time difference of 1/60 second (1/50 second for PAL) between odd and even fields because it is composed of 60 interlaced fields per second (50 fields for PAL). When recording video with Very High (D1) resolution, video is made up of frame units combining two fields – one odd field and one even field. This can cause horizontal scan lines or flashes in areas with motion because of the time difference between the two fields. Turning on the de-interlace filter provides clearer video by eliminating these horizontal scan lines and flashes.

NOTE: The *Camera Menu* also can be displayed by clicking the right mouse button on the screen while in the search mode.

Alarm Reset

Selecting (Alarm Reset) in the Search menu resets the DVR's outputs including the internal buzzer during an alarm. It is the same as pressing the ALARM button on the front panel.

Panic

Selecting (Panic) in the Search menu starts panic recording of all cameras, and selecting again stops panic recording. It is the same as pressing the PANIC button on the front panel.

Data Source

Selecting (Data Source) in the Search menu allows you to select the data source to be searched. Selecting Record searches recorded data on primary storage installed in the DVR, and selecting Other searches recorded data on storage used for another DVR then installed in this DVR.

Exit

Selecting (Exit) in the Search menu exits the search mode and enters the live monitoring mode.

Event Log Search

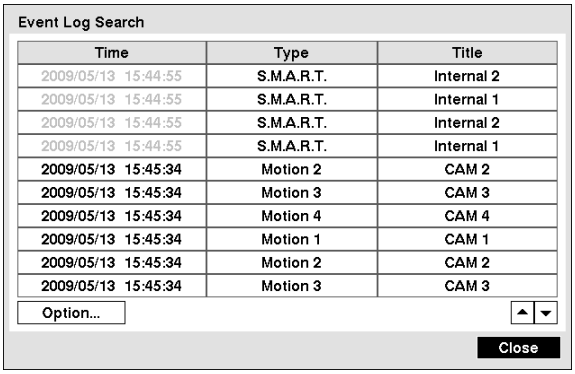


Figure 42 – Event Log Search screen.

The DVR maintains a log of each time the Alarm Input port is activated. The Event Log Search screen displays this list. Use the arrow buttons to highlight the event for which you would like to see video.

The Event Log Search screen can also be accessed by pressing the ALARM button unless there is an alarm. There is no determined user authority to display the Event Log Search screen, however, the event video will not be played unless a user with Search authority logs into the system.

Pressing the (Play/Pause) button will extract the event video and display the first image of the event. Pressing the button will start playing the "event" video segment. Pressing PLAYBACK button returns to live monitoring.

NOTE: It is possible that no recorded image displays on the current screen. Press the DISPLAY button and change the screen mode to 4x4. You will be able to easily see the camera have recorded video during target time.

You can also narrow your event search by selecting the Option… button and setting up the new search condition.

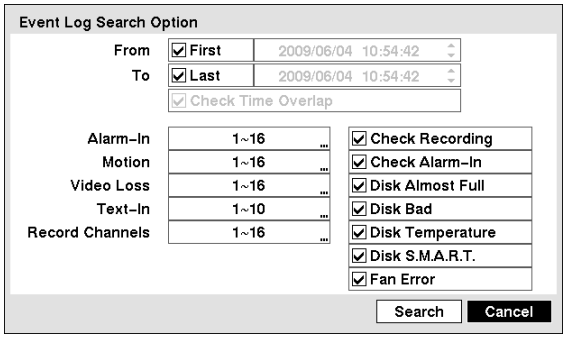


Figure 43 – Event Log Search Option screen.

You can search video from the first to last recorded images, or you can set the start and stop times and dates.

Highlight the box beside From and press the button to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the first recorded image.

Highlight the box beside To and press the button to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the last recorded image.

Highlight the box beside Check Time Overlap and press the button. It toggles between On and Off. You will only be able to turn the Check Time Overlap on or off if a user-defined date and time is set to From and To. If the DVR's date and time have been reset, it is possible for the DVR to have more than one overlapping start and stop time. When set to On, you will be asked to select one of the overlapping start and stop time. When set to Off, the DVR will display search results from all start times to all stop times.

Highlight the box beside Alarm-In and press the button. You can select the alarm inputs that you want to include in your search.

Highlight the box beside Motion and press the button. You can select the cameras for which you want any reports of motion detection.

Highlight the box beside Video Loss and press the button. You can select the cameras for which you want any reports of lost video.

Highlight the box beside Text-In and press the button. You can select the text-in devices which you want any report of text input.

Highlight the box beside Record Channels and press the button. You can select the cameras that you want to search for any reports of event recorded data. The DVR will display the events (not the camera channels) that occurred and that also are recorded on the camera channel that you selected. If you do not select a camera channel in this field, the DVR will search events that are not associated with cameras.

You can also toggle On and Off self-diagnostic events as part of your search. The choices are:

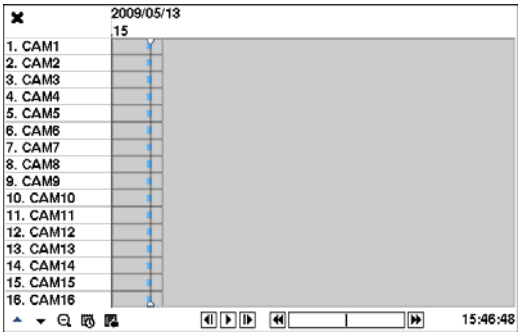
- Panic Record
- Check Recording
- Check Alarm-In
- Disk Almost Full
- Disk Bad
- Disk Temperature
- Disk S.M.A.R.T.
- Fan Error

Once you set your desired search conditions, highlight Search and press the button to display the search results in the Event Log Search screen. Selecting Cancel exits the screen without saving the changes.

Record Table Search

< Standard View >

< Compact View >



< Expanded View >

Figure 44 — Record Table Search screen.

Recording information about video images currently displayed on the screen displays on the recording status bar. A grey vertical line indicates the current search position. To search specific video, move the vertical line by using the Left or Right arrow buttons on the front panel or by clicking the mouse on the desired segment.

If the DVR's time and date have been reset to a time that is earlier than some recorded video, it is possible for the DVR to have more than one video stream in the same time range. In this case, the overlapping time range in the record table will be separated by a yellow vertical line.

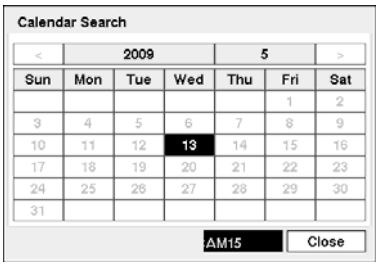
NOTE: The recorded data in the time range located after the yellow vertical line is the latest.

There are three view modes. Standard view, Expanded view and Compact view. Standard view (default) displays combined recording information of all camera channels currently displayed on the screen. In the Standard view mode, selecting the ▲ icon located at the bottom switches to the Expanded view mode. The Expanded view displays the recording information of each camera channel currently displayed on the screen. Selecting the ▼ icon in the Standard view mode switches to the Compact view mode which displays only the toolbar. Selecting the ▲ icon in the Compact view mode switches to the Standard view mode, and selecting the ▼ icon in the Expanded view mode switches to the Standard view mode.

Selecting 🔍 or 🔍 located at the bottom zooms the record table. Selecting 🔍 displays eight hours (1-minute based), and selecting 🔍 displays 24 hours (3-minute based) at once. To move to earlier or later times that are not shown in the current record table screen, select the arrows located at the end of the times by using the arrow buttons on the front panel.

NOTE: If the DVR has images recorded in more than one recording mode in the same time range, the recording status bar displays recording information in the following priority order: Panic → Pre-Event → Event → Time. The color of the bar indicates different recording modes: Red for Panic, Yellow for Pre-Event, Purple for Event, and Blue for Time.

Selecting 📅 located at the bottom displays the Calendar Search screen.



Days with recorded video display on the calendar with white numbers. You can select the days with recorded video by using the arrow buttons on the front panel. Once you have selected a day, pressing the ⏯ button displays the first recorded image of the selected date on the screen. Once you have selected the date you want to search, review the surrounding video by using the playback controls located at the bottom. Refer to the *Playing Recorded Video* section of this chapter for information regarding playback controls.

Selecting 🔍 located at the bottom displays the Search menu.

- Go To: Displays the first or last recorded image, or searches by date and time (see the previous *Searching Video – Go To* section of this chapter for more details).
- Clip-Copy: Copies a video segment and saves it (see the following *Clip Copy* section for more details).
- Zoom: Zooms the current playback image.
- Enable De-Interlace: Turns the de-interlace filter on.
- Slow Play: Plays video at low speed (x1/2, x1/3, x1/4, x1/6 and x1/8).

Selecting ✖ in the top-left corner exits the Record Table Search screen.

Motion Search

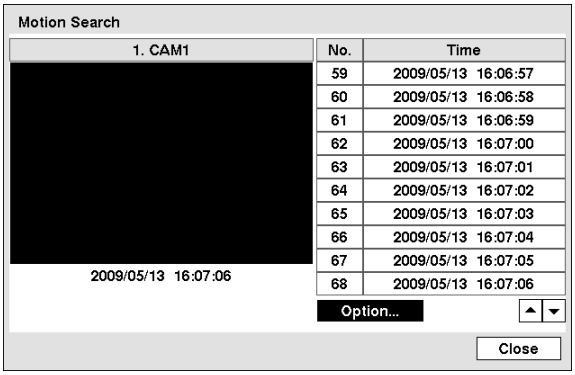


Figure 45 ─ Motion Search screen.

The Motion Search… can be selected from the Search menu while the DVR displays the camera full screen. The Motion Search screen displays a list of motion events. Use the arrow buttons to highlight the event for which you would like to see video and press the ⏯ (Play/Pause) button to display the video associated with the selected event on the small search screen.

Highlighting Close and pressing the ⏯ button will extract the video associated with the Motion event and display the first image of the event. Pressing the ⏯ button will start playing the "event" video segment. Pressing PLAYBACK returns to live monitoring.

You can also narrow your event search by selecting the Option… button and setting up the new search condition.

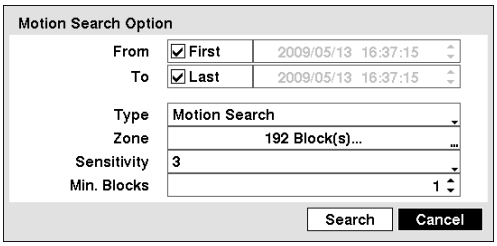


Figure 46 ─ Motion Search Option screen.

You can search video from the first to last recorded images, or you can set the start and stop times and dates.

Highlight the box beside From and press the ⏯ button to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the first recorded image.

Highlight the box beside To and press the ⏯ button to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the last recorded image.

Highlight the box beside Type and press the ⏯ button. You can select between Motion Search and Museum Search. Motion Search detects motion in the defined area. Museum Search detects if a defined object has moved.

Highlight the box beside Zone and press the ⏯ button. An image from the video appears with a grid overlaid. You can turn sensor blocks On and Off to define the area of the picture in which you want to search for motion.

NOTE: Defining the area of the image in which you want to search for motion is nearly identical to setting up the DVR for Motion Detection. Please refer to *Motion Detection Screen* in *Chapter 3 — Configuration* for more detailed instructions on setting up the detection blocks.

NOTE: When setting the Museum Search Zone, the zone should be placed inside of the border line of the target object. If the selected block is placed on the border line, the sensitivity of the Museum Search may decrease.

The zone should be placed or focused on the centre or, at least, within the outline of targeted object.

Highlight the box beside Sensitivity and press the button. You will be able to select from 1 (low sensitivity) to 5 (high sensitivity).

Highlight the box beside Min. Blocks and press the button. You will be able to set the number of sensor blocks that must be activated. Setting the Min Blocks will only be available if Motion Search is selected.

Once you set your desired search conditions, highlight Search and press the button to display the search results in the Motion Search screen. Selecting Cancel exits the screen without saving the changes.

When you search for motion events of another camera, you will be asked whether or not you want to delete the previous search results from the list.

Text-In Search

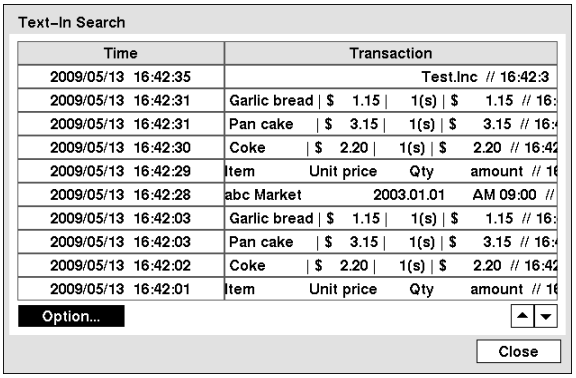


Figure 47 — Text-In Search screen.

The DVR maintains a log of each time there is Text Input. The Text-In Search screen displays this list. Use the arrow buttons to highlight the event for which you would like to see video.

Pressing the (Play/Pause) button will extract the video associated with the Text Input and display the first image of the event. Pressing the button will start playing the "event" video segment. Pressing PLAYBACK returns to live monitoring.

NOTE: It is possible that no recorded image displays on the current screen. Press the DISPLAY button and change the screen mode to 4x4. You will be able to easily see the camera have recorded video during target time.

NOTE: Text Input information will be overlaid on the image while the recorded video is played at regular speed.

You can also narrow your event search by selecting the Option… button and setting up the new search condition.

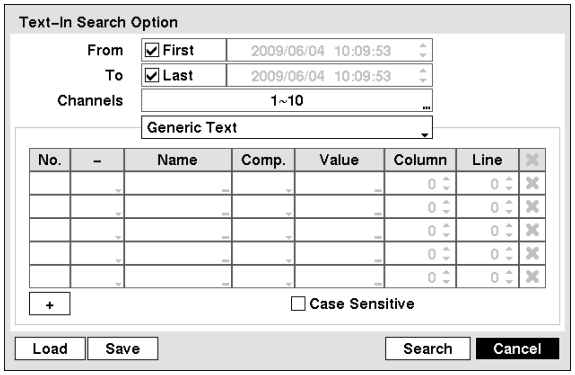


Figure 48 ─ Text-In Search Option screen.

You can search video from the first to last recorded images, or you can set the start and stop times and dates.

Highlight the box beside From and press the button to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the first recorded image.

Highlight the box beside To and press the button to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the last recorded image.

Highlight the Channel and press the button. Select the text-in devices that you want to search for text input.

Highlight the text input device box and press the button. Select your Text Input Device from the list.

Highlighting the + and pressing the button allows you to add a new set of search parameter. Set up the desired search parameter. Refer to the *Appendix B – Text-In Search Examples* for further information on setting up search parameters. The ✖ column can be used to delete a set of search parameter or entire sets of search parameters.

Highlight Case Sensitive and press the button. This will toggle between On and Off. When this feature is On, the search will find only those text strings in which the case matches.

Highlight Load and press the button to load saved search option settings. Select the desired search option settings.

Highlight Save and press the button to save the current search option settings. A virtual keyboard appears that you can use to enter the search option name.

Once you set your desired search conditions, highlight Search and press the button to display the search results in the Text-In Search screen. Selecting Cancel exits the screen without saving the changes.

Clip Copy

The Clip-Copy screen can be used to copy video clips to an internal CD-RW or DVD RW drive, or external USB hard disk, CD-RW or flash drive. The copied video clips can be viewed on computers running Microsoft Windows 98, ME, 2000, XP or Vista. Refer to the *Appendix A ─ USB Hard Disk Drive Preparation* for information on preparing the external drive for clip copy. The clip copy can be simply done by pressing the CLIP COPY button.

Press the CLIP COPY button while in the Live monitoring mode, and the Clip-Copy screen appears to allow clip copy setup.

Pressing the CLIP COPY button during the playback will set the starting point of the video to be clip copied, and the icon displays at the bottom-left corner of the screen. Pressing the CLIP COPY button again will set the ending point of the video to be clip copied by displaying the Clip-Copy screen.

Pressing and holding the CLIP COPY button for more than two seconds while in the Playback mode or Live Monitoring mode initiates the One-Touch Clip Copy function. The last recorded image will be the ending point of video to be clip copied, and the system will automatically begin to calculate the possible video data size that the selected storage media can handle.

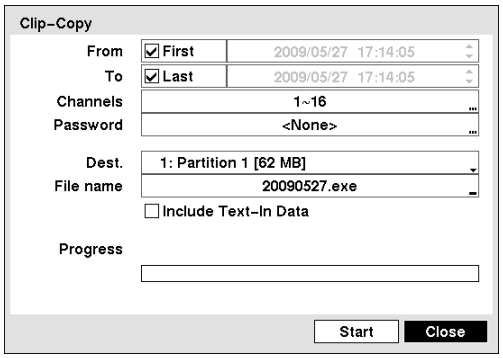


Figure 49 – Clip-Copy screen.

You can search video from the first to last recorded images, or you can set the start and stop times and dates.

Highlight the box beside From and press the (Play/Pause) button to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the first recorded image.

Highlight the box beside To and press the button to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the last recorded image.

Highlight the box beside Channels and press the button. You can select the cameras that you would like to include in your video clip.

Highlight the box beside Password and press the button. A virtual keyboard appears allowing you to enter the password for reviewing the video clips.

Highlight the box beside Dest. and press the button. You can select the storage device on which you would like to record the video clip. You can choose from Internal CD-RW, Internal DVD RW, USB Storage and USB CD-RW.

CAUTION: The USB device for clip copy must be FAT 16 or FAT32 format.

NOTE: While copying video clips on the CD-RW or DVD RW, the recording speed might decrease.

NOTE: When the error message "Firmware update of the optical drive is required" displays, update the firmware of the installed CD-RW drive or DVD RW drive. Please follow the instructions described in *Chapter 3 – Configuration – System Information* section.

The DVR automatically assigns a file name to the video clip. However, you can give the video clip file a different name. Highlight the box beside File Name and press the button. A virtual keyboard appears. Enter a file name for the video you are backing up and select Close. The DVR will automatically add the camera number (for example "01") and ".exe" to the file name.

NOTE: When naming a file, you cannot use the following characters: \, /, :, *, ?, ", <, >, |.

Highlight Include Text-In Data and press the button. This will toggle between On and Off. When this feature is On, you can include text-in data when copying video if the video was recorded with text-in data.

Once you have given the video clip a file name, highlight the Start button and press the button. The confirmation screen displaying data size will appear. When the storage device does not have enough space, the DVR will ask if you want to copy as much of the video clip as possible in the available space.

Highlight the Continue button and press the button to continue clip copy.

Once the clip copy starts, you can cancel it by selecting Cancel or hide the screen by selecting Close. When selecting Close, Clip Copy continues and a confirmation screen will display when complete.

NOTE: Only 4.7GB DVD media is available. To clip copy video on the DVD media using remaining space, the size of previously recorded data on the DVD media should be less than 4GB.

NOTE: The file size for clip copy is limited to 2GB.

You can use other functions on the DVR while video is being backed up. To do this, highlight the Close button and press the button. You can return to the Clip-Copy screen at any time to check the progress.

You do not need to install any special software on your personal computer to review the video clips. Refer to the RAS manual for instructions on how to review video clips you have copied.

NOTE: During Clip Copy, you cannot shut the system down, clear data on the storage device, or format the storage device.

CAUTION: Do NOT disconnect the USB cable or the power from the external drive while copying video clips. If the external drive is shut down or the USB cable is disconnected while copying video clips, THE DVR SYSTEM MAY NOT WORK NORMALLY OR THE EXTERNAL DRIVE COULD BE DAMAGED, and you will get an error message the next time you try to copy video clips. You will need to power down the DVR and restart it to get rid of the error message. Once the file system of the USB hard disk drive has been corrupted, this error message cannot be dismissed. Even after restarting the DVR it may automatically restart while preparing to clip copy. You must recover the file system using the recovery program, or you must reformat the hard disk drive.

Appendix A – USB Hard Disk Drive Preparation

Preparing the USB hard disk drive in Windows 2000

NOTE: Preparing a USB hard disk drive under Windows XP and Windows Vista is almost identical to Windows 2000.

1. Connect the USB hard disk drive to your computer using the USB Cable.
2. Turn on your computer.
3. The USB device icon should display on the Taskbar.
4. If the USB hard disk drive is partitioned or has data, it will show up in *My Computer* as a hard disk drive icon. Check the file system by right clicking on the icon and checking under *Properties* > *General* > *File System.* If the file system is NOT FAT32 format, format the USB hard disk drive using the FAT32 format.
5. If the USB hard disk drive is not partitioned, go to *Administrative Tools* in *Control Panel* and launch *Computer Management.* Open *Disk Management* in *Storage* and right click an unallocated region of the USB hard disk drive. Then, click *Create Partition.*
6. In the *Create Partition wizard*, click *Next* then *Primary Partition*, and follow the instructions on the screen. Make sure that the FAT32 is selected for the file system.

NOTE: The partition size should be less than 32GB because of Microsoft limitations.

After formatting is complete, the USB hard disk drive will be added to *My Computer*.

7. Connect the USB hard disk drive to the DVR.

Preparing the USB hard disk drive in Windows 98

NOTE: Preparing a USB hard disk drive under Windows ME is almost identical to Windows 98.

1. Connect the USB hard disk drive to your computer using the USB Cable.
2. Turn on your computer. The *Add New Hardware wizard* window will appear.
3. Install the device driver for the USB backup device following the instructions provided with your USB hard disk drive.
4. If the USB hard disk drive is partitioned or contains data, it will show up in *My Computer* as a hard disk drive icon. Check the file system in *Properties* > *General* > *File System.* If the file system is NOT FAT32 format, format the USB hard disk drive with FAT32 format.
5. Run the FDISK utility by clicking *Start* then *RUN*. Type "fdisk" and click OK.
6. When the MS-DOS command prompt appears, type "Y" and hit the enter key.
7. In the FDISK Option menu, choose *"5. Change current fixed disk drive."*
8. Choose the appropriate letter corresponding to the USB hard disk drive.
9. In the FDISK Option menu, choose *"1. Create DOS partition or Logical DOS Drive."*
10. In the Create DOS Partition or Logical DOS Drive menu, choose *"1. Create Primary DOS Partition."* And Type "Y" to use all available space and hit the enter key. Hit ESC to exit the screen after the USB hard disk drive partition is created.
11. Restart your computer and verify the newly created drive is in *My Computer*.
12. Right click the newly created hard disk drive icon and select *"Format"*.
13. In the Format Screen, select *"Full"* as the *"Format type"* and click *"Start"*.
14. After formatting is complete, connect the USB hard disk drive to the DVR.

Appendix B ─ Text-In Search Examples

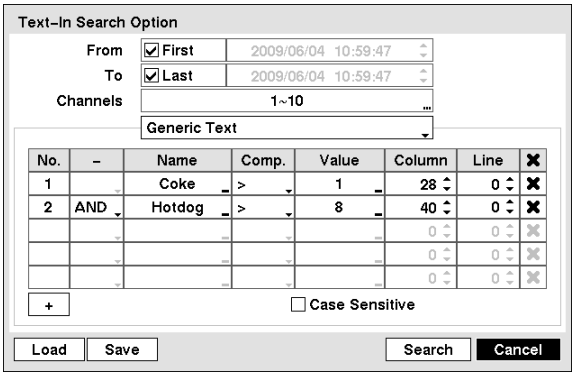
Search Example I

```
        1         2         3         4         5         6
12345678901234567890123456789012345678901234567890123456789012345678901234567890

    Item       Unit price     Qty       amount
================================================
 Coke         | $    2.20 |     1(s) | $      2.20
 Fanta        | $    2.20 |     1(s) | $      2.20
 Hotdog       | $    3.50 |     3(s) | $     10.50
 Pepsi        | $    1.95 |     1(s) | $      1.95
================================================
                            total : $      16.85
Thank you~~
```

In the above text-in data, you can find that the comparison value is located at 17th (Unit price, $ mark will be ignored automatically), 28th (Qty) and 40th (amount) characters (including spaces) from the left. In this case, you can enter "17", "28" and "40" in each Column box.

For example, if you want to search for Coke with a Qty (Quantity) of more than 1 and Hotdog with an amount totaling over $8, the following search condition can be set.



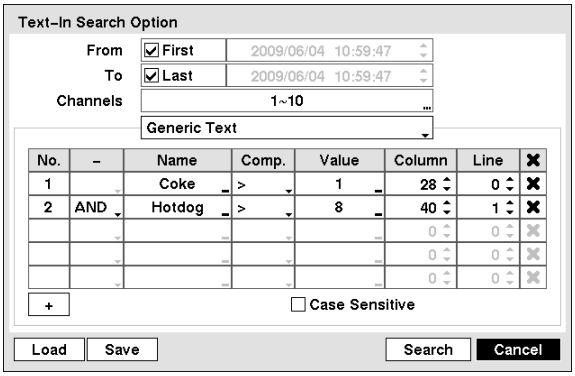
Search Example II

```
        1         2         3         4         5         6
12345678901234567890123456789012345678901234567890123456789012345678901234567890

    Item       Unit price     Qty       amount
================================================
 Coke         | $    2.20 |     1(s)
                                          $      2.20
 Fanta        | $    2.20 |     1(s)
                                          $      2.20
 Hotdog       | $    3.50 |     3(s)
                                          $     10.50
 Pepsi        | $    1.95 |     1(s)
                                          $      1.95
================================================
                            total : $      16.85
Thank you~~
```

In the above text-in data, you can find that the comparison value is located at 17th (Unit price, $ mark will be ignored automatically), 28th (Qty) and 40th (amount) characters (including spaces) from the left, but the value of amount category is located on a different line from Item. In this case, you can enter "17", "28" and "40" in each Column box and enter "1" in the Line box for the next line.

For example, if you want to search for Coke with a Qty (Quantity) of more than 1 and Hotdog with an amount totaling over $8, the following search condition can be set.



Appendix C – WebGuard

WebGuard allows you to access a remote DVR, monitor live video images and search recorded video using Internet Explorer web browser anytime from virtually anywhere.

Computer system requirements for using the WebGuard program are:

- Operating System: Microsoft® Windows® 2000, Microsoft® Windows® XP or Microsoft® Windows® Vista
- CPU: Intel Pentium III (Celeron) 600MHz or faster
- RAM: 128MB or higher
- VGA: 8MB or higher (1024x768, 24bpp or higher)
- Internet Explorer: Version 6.0 or later

Start Internet Explorer on your local PC. You can run the WebGuard program by entering the following information in the address field.

– "http://IP address:port number" (The DVR IP address and the WebGuard port number (default: 12088) set in the Network setup screen (General tab))
– Or, "http://DVRNS server address/DVR name" (The DVRNS server address and the DVR name registered on the DVRNS server)
– Or, "http://www.dvronline.net" (Entering the DVR IP address or the DVR name will be required when logging in)

NOTE: WebGuard only works with Microsoft Internet Explorer and will NOT work with other browsers.

Select between the WEBWATCH (Web monitoring) and WEBSEARCH (Web search) modes and enter the appropriate port number of the program. Entering ID and PASSWORD and clicking the [LOGIN] button logs in using the selected mode. Selecting Save ID saves the ID you entered.

You will need to enter the DVR IP address in the DVR ADDRESS field when running the WebGuard program by entering http://www.dvronline.net. Selecting the Use DVRNS option allows you to enter the DVR name registered on the DVRNS server instead of the IP address. You must enter the DVRNS server address and port number in the SETUP setting when selecting the Use DVRNS option.

NOTE: The port numbers for *WATCH*, *SEARCH* and *AUDIO* should be the same with port numbers for *Remote Watch*, *Remote Search* and *Remote Audio* set during Network setup.

NOTE: When running the updated WebGuard for the first time, Internet Explorer might occasionally load the information of the previous version. In this case, delete the temporary internet files by selecting Tools → Internet Options → General tab, and then run WebGuard again.

NOTE: There might be a problem that the bottom of WebGuard page is cropped due to the address or status bars in Microsoft Internet Explorer 7.0. In this situation, it is recommended that websites open windows without address or status bars by changing the internet setting. (Go to the Tools → Internet Options → Security tab → Click the Custom level… button → Select *Enable* for the *Allow websites to open windows without address or status bars* option)

NOTE: When running WebGuard in the Microsoft Windows Vista operating system, it is recommended to start Internet Explorer with elevated administrator permissions. Click the right mouse button on the Internet Explorer icon and select the *Run as administrator* option from the context menu. Otherwise, some functions of WebGuard might be limited.

NOTE: There might be a problem with screen display or screen update due to low image transmission speed when using the Microsoft Windows Vista operating system. In this situation, it is recommended you disable the Auto Tuning capability of your computer. Run the Command Prompt with elevated administrator permissions (Go to the Start Menu → Accessories → *Command Prompt* → Click the right mouse button and select the *Run as administrator* option). Then enter "netsh int tcp set global autotuninglevel=disable" and hit the enter key. Restart your computer to apply the changes. If you want to enable the Auto Tuning capability again, enter "netsh int tcp set global autotuninglevel=normal" after running the Command Prompt with elevated administrator permissions. Restart your computer to apply the changes.

Web Monitoring Mode

WebWatch is a remote web monitoring program that allows you to monitor live video transmitted in real-time from the remote DVR.

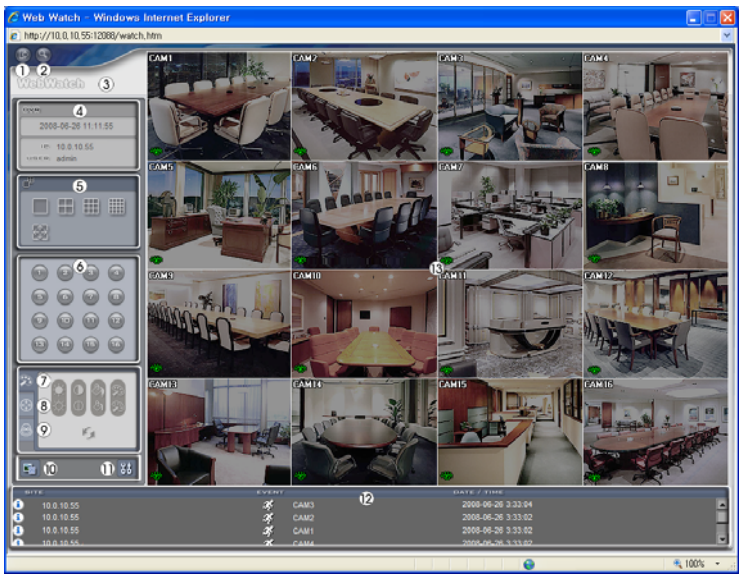


Figure 50 ─ WebWatch screen.

① Click the to log out the WebGuard program.

② Click the to access to the web search mode.

③ Position the mouse pointer on the WebWatch logo to see the version of the WebGuard program.

④ The DVR information window displays the login information of WebGuard.

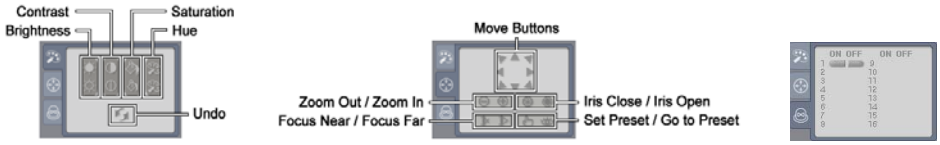
⑤ Click the screen format to select the desired display mode. When changing the screen format, the selected camera on the current screen will be located in the first cell of the new layout.

⑥ Click the camera button (1 to 16) to select the camera to be viewed.

⑦ Click the to adjust the brightness, contrast, saturation and hue of monitoring image.

⑧ Click the to control pan, tilt and zoom of the camera from a remote site.

⑨ Click the to control alarm out devices at the remote site.



⑩ Click the to save the current image as a bitmap or JPEG file format.

⑪ Click the to set up the image drawing mode and OSD display. You can adjust the display speed by changing the image drawing mode, and select OSD information to be displayed on the screen.

⑫ The event status window at the bottom displays a list of events that were detected from the remote site.

⑬ Selecting a camera on the screen and clicking the right mouse button allows you to change the camera name and the image aspect ratio displayed on each camera screen, and to enhance image display quality by eliminating stair stepping (aliasing) effects in the enlarged image.

NOTE: A camera name change in the Web Watch mode does not affect the camera name set up on the remote site. Leaving the Camera Title blank causes the camera name set up on the remote site to display.

Web Search Mode

WebSearch is a remote web search program that allows you to search recorded video on the remote DVR.

NOTE: The remote site connection in the Web Search mode will automatically be disconnected if there is no activity for 30 minutes.

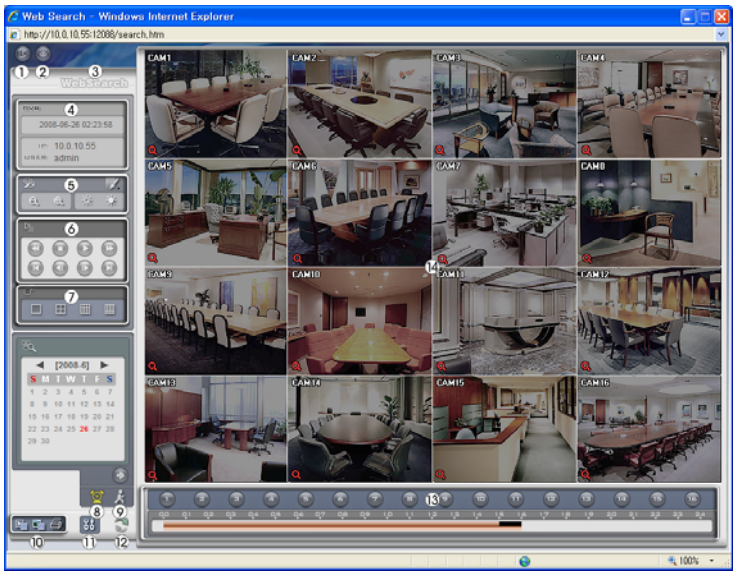


Figure 51 ─ WebSearch screen.

① Click the to log out the WebGuard program.

② Click the to access to the web monitoring mode.

③ Position the mouse pointer on the WebSearch logo to see the version of the WebGuard program.

④ The DVR information window displays the time information of recorded data on the remote DVR and login information of WebGuard.

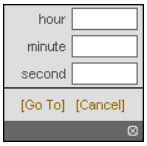
⑤ Click the to blur, sharpen, equalize and interpolate playback images. Click the to zoom out or zoom in the recorded image. Click the to adjust the brightness of the recorded images.

NOTE: Image processing works only in the pause mode.

⑥ The playback function buttons include fast backward, pause, play, fast forward, go to the first image, go to the previous image, go to the next image, and got to the last image.

⑦ Click the screen format to select the desired display mode.

⑧ Click the to enter the time-lapse search mode which allows you to search for recorded data by time and then play back images found within the time parameters. The Timetable window located at the bottom displays the time information for the image of the date selected on the calendar. If more than one video stream in the same time range, you can select the video stream you want to search. Clicking a specific time displays the image recorded at that time on the screen. Selecting the allows you to display an image from a specific time.



⑨ Click the to enter the event search mode which allows you to search for event log entries using specific conditions and play back the images associated with those event entries.

⑩ Click the to save any video clip of recorded data as an executable file, or click the to save the current image in a bitmap or JPEG file format. Click the to print the current image on a printer connected to your computer.

⑪ Click the to set up the image drawing mode and OSD display. You can change the display speed by adjusting the image drawing mode, and select OSD information to display on the screen.

⑫ Click the to reload the recording data.

⑬ The timetable displays recorded data of the selected camera by time (in hour segments).

⑭ Selecting a camera on the screen and clicking the right mouse button allows you to change the camera name, play audio while playing back recorded video that has recorded audio (single-screen layout only) and the image aspect ratio displayed on each camera screen, and to enhance image display quality by eliminating stair stepping (aliasing) effects in the enlarged image.

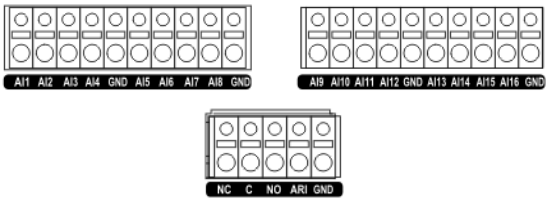
NOTE: A camera name change in the Web Search mode does not affect the camera name set up on the remote site. Leaving the Camera Title blank causes the camera name set up on the remote site to display.

Appendix D – Troubleshooting

Problem	Possible Solution
No Power	• Check power cord connections. • Confirm that there is power at the outlet.
No Live Video	• Check camera video cable and connections. • Check monitor video cable and connections. • Confirm that the camera has power. • Check camera lens settings.
Live Video Very Bright	If a cable is attached to the "Loop" connector, make certain it is connected to a properly terminated device.
No Live Video on the VGA Monitor	If the DVR does not detect a VGA monitor automatically, press and hold the PANIC button on the front panel or remote control for 5 seconds or longer to switch the video output from Video out to VGA out.
DVR has stopped recording	If hard disk drive is full, you will either need to delete video or set the DVR to the Overwrite Mode.
The icon ● displays, however, the DVR is not recording.	When the DVR is in the Pre-Event recording mode, the yellow and ● display when there is no event, and the DVR is not recording. The red and ● display when any event occurs and the DVR starts recording.

Appendix E – Connector Pin Outs

I/O Connector Pin Outs

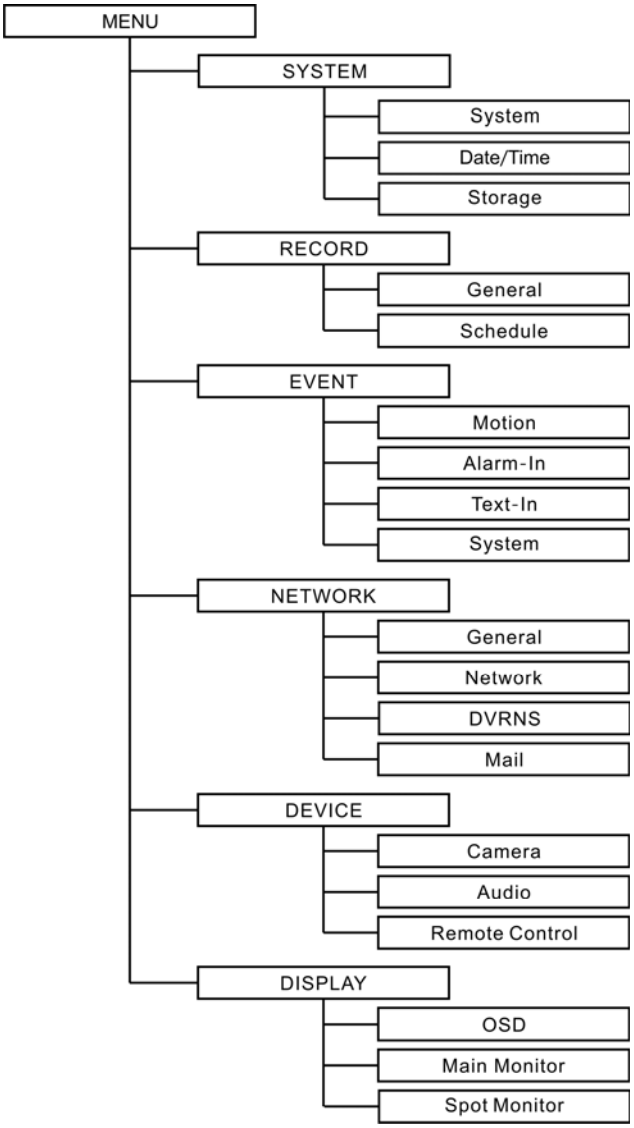


AI (1 to 16)	Alarm Inputs 1 to 16
GND	Chassis Ground (5 connectors)
NC	Relay Alarm Outputs (Normally Closed)
NO	Relay Alarm Outputs (Normally Open)
C	Relay Common
ARI	Alarm Reset In

RS485 Connector Pin Outs

Master Unit	Slave Unit
RX-/TX- → To → TX-/RX-	
RX+/TX+ → To → TX+/RX+	

Appendix F – Map of Screens



Appendix G – System Log Notices

Boot Up	Schedule On
Shutdown	Schedule Off
Restart	Panic On
Upgrade	Panic Off
Upgrade Fail	Clear All Data
Power Failure	Clear Disk
Time Change	Format Disk
Time Zone Change	Disk Full
Time Sync	Auto Deletion
Time Sync Fail	Search Begin
Disk Bad	Search End
Login	Clip-Copy Begin
Logout	Clip-Copy End
Setup Begin	Clip-Copy Cancel
Setup End	Clip-Copy Fail
Remote Setup Change	Clip-Copy User:
Remote Setup Fail	Clip-Copy From:
Setup Imported	Clip-Copy To:
Setup Import Failure	Clip-Copy Duration of Video:
Setup Exported	Clip-Copy Camera:
Setup Export Failure	
Setup Export Cancel	

Appendix H – Error Code Notices

System Upgrade Related		Clip Copy Related	
No.	Description	No.	Description
0	Unknown error.	0	Unknown error.
1	File version error.	1	Device error.
2	Operating system version error.	2	Mounting failed.
3	Software version error.	3	No media.
4	Kernel version error.	4	Invalid media.
100	Upgrade device mounting failed.	5	File already existed.
101	Package is not found.	6	Not enough space.
102	Extracting package failed.	7	Creating temporary file failed.
103	LILO failed.	8	Opening disk failed.
104	Rebooting failed.	9	Formatting disk failed.
105	Invalid package.	10	Database has been changed.
106	ODD firmware upgrade failed.	11	Appending failed.
300	Remote connection failed.	12	Bad sector.
301	Remote network error.	13	No executable file.
302	Remote upgrade is not authorized.	14	Opening executable file failed.
303	Saving remote package failed.	15	Writing executable file failed.
304	Remote upgrade is cancelled by the user.	16	Creating image failed.
400	USB device mounting failed.	17	Burning failed.
401	Reading upgrade package on the USB device failed.	18	Burning is out of time.
402	Copying upgrade package on the USB device failed.		
500	System is busy clip copying.		

Appendix I – Specifications

VIDEO	
Signal Format	NTSC or PAL (Auto Detect)
Video Input	Composite: 8 or 16 looping inputs, 1 Vp-p, auto-terminating, 75 Ohms
Monitor Outputs	Composite: 1 BNC, 1 Vp-p, 75 Ohms SPOT: 1 BNC, 1 Vp-p, 75 Ohms VGA: 1
Video Resolution	Composite: 720x480 (NTSC), 720x576 (PAL) VGA: 800x600 @ 60Hz
Playback/Record Speed (images per second)	120/120ips (NTSC), 100/100ips (PAL)

INPUTS/OUTPUTS	
Alarm Input	8 or 16 terminal, programmable as NC or NO, 2.4V (NC) or 0.3V (NO) threshold, 5VDC
Alarm Output	1 relay output, terminal blocks, programmable as NC or NO, 2A@125VAC, 1A@30VDC
Alarm Reset Input	1 TTL, terminal block
Internal Buzzer	80dB at 10cm
Network Connectivity	10/100 Mbps Ethernet (RJ-45)
Audio Input	RCA Input: 4, Line In
Audio Output	RCA Output: 1, Line Out
Text Input	POS Interface, ATM Interface

CONNECTORS	
Video Input	Composite: 8 or 16 BNC
Video Loop	Composite: 8 or 16 BNC (Auto Terminating)
Monitor Output	Composite: 1 BNC VGA: 1 VGA SPOT (Composite): 1 BNC
Audio In	4 RCA connector
Audio Out	1 RCA connector
Alarm Input/Output	Terminal blocks
Ethernet Port	RJ-45
RS232C Serial Port	DB9 (P)
RS485 Serial Port	Two-connector terminal block
USB Port	2 (USB 2.0)
IR Port	1 Remote Control

STORAGE	
Primary Storage	SATA hard disk drive (up to 2)
Secondary Storage*	Built-in DVD RW drive USB hard disk drive, CD-RW drive or flash drive

* When installing an internal DVD RW drive, connect the SATA I/O cable to the SATA3 socket.

Specifications are subject to change without notice.

GENERAL	
Dimensions (W x H x D)	16.9" x 3.5" x 15.7" (430mm x 88mm x 400mm)
Unit Weight	14 lbs. (6.3kg)
Shipping Weight	21 lbs. (9.3kg)
Shipping Dimensions (W x H x D)	21.3" x 11.4" x 23.2" (540mm x 290mm x 590mm)
Operating Temperature	41°F to 104°F (5°C to 40°C)
Operating Humidity	0% to 90%
Power	100 – 240 VAC, 1.2 – 0.6 A, 60/50Hz
Power Consumption	Max. 35W
Approvals	FCC, UL**, CB, CE

** CAUTION: Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions. This equipment is indoor use and all the communication wiring are limited to inside of the building.

Specifications are subject to change without notice.